Final Biological Assessment for Steelhead Trout and its Habitat in the John Day River Basin

Submitted to: National Marine Fisheries Service Portland Oregon

June, 1999

Submitted by: Bureau of Land Management, Prineville District Central Oregon Resource Area

For: Ongoing and Proposed Actions in 1999

6840P

Date: April 29, 1999

Rick Applegate
Attn: Ron Linland
National Marine Fisheries Service
Environmental and Technical Services Division
525 NE Oregon St., Suite 500
Portland, Oregon 97232-2737

Dear Mr. Applegate,

Per regulations on interagency cooperation (50 CFR 402) pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (as amended), this letter and the enclosed Biological Assessment (BA) constitute a request to the National Marine Fisheries Service for formal consultation. The enclosed BA documents nine proposed actions on the Central Oregon Resource Area, Prineville District Bureau of Land Management which "may affect" Mid Columbia summer steelhead ESU, which was listed as threatened under the ESA (March 16, 1999).

Effects determinations reached by the Level 1 team are "may affect, not likely to adversely affect (NLAA)" for four of the actions, and "may affect, likely to adversely affect (LAA)" for five of the actions. If you have any questions, please contact Gary Torretta (541) 416-6763, or Brent Ralston (541) 416-6713.

Sincerely,

Dick Cosgriffe
Area Manager
Central Oregon Resource Area

Table of Contents

A. Identification of listed and proposed critical habitat affected by actions in the section 7 watershed.

Summer Steelhead

The Middle Columbia River Evolutionary Significant Unit (ESU) of inland steelhead (*Onchorynchus mykiss*) is currently classified as threatened by the National Marine Fisheries Service (NMFS). NMFS determined that there are 2 out of 15 ESU's for steelhead that warrant listing (Middle Columbia and Upper Willamette River ESU's). Steelhead inhabiting the John Day River Basin within the Central Oregon Resource Area of the Prineville District Bureau of Land Management (BLM), are in the Middle Columbia ESU.

The inland steelhead ESU occupies the Columbia River Basin and tributaries from above (and excluding) the Wind River in Washington and the Hood River in Oregon, upstream to, and including, the Yakima River, in Washington.

In the John Day River basin, steelhead spawning occurs widely throughout the basin, primarily within tributary streams to the upper main river and its forks. See Maps 2 and 3 for a depiction of occupied steelhead habitat in relation to BLM-managed lands. The John Day River Basin contains approximately 1,800 miles of usable spawning/rearing habitat for steelhead trout, and the basin contains one of last remaining totally wild populations of steelhead trout in the Columbia River Basin. The John Day steelhead population has not been supplemented with hatchery fish.

Scope

The John Day Basin encompasses about 5.1 million acres of an extensive interior plateau between the Cascade Range and the Blue Mountains in northeast-central Oregon. Most of the basin is privately owned (3.2 million acres). National Forest lands encompass about 1.53 million acres, and about 332,300 acres (about 7 percent) are managed by the BLM. Oregon Department of Fish and Wildlife (ODFW), National Park Service, Oregon State Land Board, Oregon Forestry Department, and the Corps of Engineers manage about 57,000 acres. (See Appendix A for a map of the BLM Lands). Predominate management activities in this watershed are agriculture, grazing, timber, and recreation.

Within the John Day Basin are four 4th field Hydrologic Units (HU) or subbasins:

-Lower John Day #17070204
-Upper John Day #17070201
-North Fork John Day #17070202
-Middle Fork John Day #17070203

Table 1 shows total acres, and Prineville District BLM managed lands within each 4th field Hydrologic Unit.

Table 1. **Subbasins in the John Day Basin.**

Subbasin Name	**Total Acres**	**Prineville District BLM Managed Acres**
Lower John Day	2,011,000	242,618
Upper John Day	1,375,000	145,630
North Fork John Day	1,187,000	35,350
Middle Fork John Day	504,500	3,975

Public land patterns in the John Day Basin are scattered, and often irregularly shaped. This land pattern creates challenges in managing sensitive resources when public lands are surrounded by large expanses of private lands. Somewhat blocked and consolidated public lands are located along the lower John Day River corridor below Clarno (RM109-29), the Sutton Mountain area near Mitchell, Oregon, uplands west of Rudio Mountain, (RM 185-207), and the South Fork John Day watershed (RM 9-36) between the Ochoco and Malheur National Forests

B. Fisheries Information and Watershed Baseline Conditions

Summer Steelhead

General Information

All steelhead in the Columbia River Basin upstream from The Dalles Dam are summer-run, inland steelhead (Schreck et al., 1986; Reisenbichler et al., 1992; Chapman et al., 1994). Steelhead in Fifteen Mile Creek, OR., are genetically allied with inland *O. mykiss*, but are winter-run. Winter steelhead are also found in the Klickitat and White Salmon Rivers, WA.

Life history information for steelhead of this ESU indicates that most middle Columbia River steelhead smolt at 2 years and spend one, two, or rarely, three years in the ocean (i.e., 1-salt, 2-salt, or three salt fish, respectively) prior to re-entering to fresh water, where they remain up to a year prior to spawning (Howel et al., 1985; Bonneville Power Association (BPA), 1992).

Summer steelhead occur throughout the John Day Basin where habitat conditions are suitable, and accessible.

In the early 1960's, fishery managers released about 500,000 hatchery winter steelhead fry and limited numbers of pre-smolts used for experimental purposes. Few likely survived due to the use of improper stocks and high hauling mortality. No production releases of hatchery steelhead smolts were ever made in the John Day Subbasin. Hatchery releases for any purposes ceased in 1966 in favor of wild stocks. Today, the John Day steelhead run is composed entirely of wild stock, with stray rates running 4 to 8 percent, a rate accepted by experts to be normal and necessary to maintain genetic diversity of the wild stock (ODFW, 1990).

John Day River summer steelhead are currently classified as a wild population on Oregon's Wild Fish Management Policy Provisional Wild Fish Population List [OAR 635-07-529(3)]. A population meets ODFW's definition of a wild population if it is an indigenous species, naturally reproducing within its native range, and descended from a population that is believed to have been present in the same geological area prior to the year 1800. Human caused genetic changes, either from interbreeding with hatchery origin fish or habitat modification, do not disqualify a population from the wild classification under this definition.

Life History and Population Characteristics

Adult steelhead on their spawning migration enter the Columbia River in mid-May, pass over Bonneville Dam July-August, and enter the John Day River (JDR) as early as September, and as late as March. Emigration into the John Day Basin is dependant upon water temperatures and flows, and usually peaks in October (Unterwegner, 1999, personal communication). Steelhead will likely hold in the Columbia or the lower Deschutes Rivers until water temperatures in the JDR are suitable.
Wild summer steelhead spawn in the basin from March to mid June. A majority of steelhead spawn in tributaries that enter the John Day River starting as low in the basin as Rock Creek,

which is located near Condon, to those streams entering the upper main forks. About 20 percent may spawn in the upper main forks of the river, depending on spring runoff conditions. Typically the earliest spawning occurs in tributaries in the lower basin, probably because flows decrease earlier in these more arid drainages.

Steelhead eggs take about 30 days at 50 degrees F to hatch, and another two to three weeks to reach fry stage. Time required for incubation varies significantly with water temperature (ODFW, 1990). Fry emergence occurs in spring or early summer depending on time of spawning and water temperature during incubation.

Wild summer steelhead juveniles rear in the John Day basin for two to three years before migrating to the ocean as smolts. Rearing fish thrive in moderate gradient streams with high quality water, with summer water temperatures ranging from 50 to 65 degrees F. They also need streambank vegetation (grasses/sedges/, shrubs and trees) for food, cover, shade, nutrient cycling, good aquatic insect production, complex instream hiding cover, and instream large wood/structure. Ample pool habitat is essential in maximizing fish production.

Smolt migration out of the John Day Basin is staggered over several months (April to July), with peak timing in April and May (Unterwegner, 1999, personal communication). Smolt size varies by stream depending on food abundance and rearing water temperatures. Generally, healthy wild smolts average 7 inches in length. Some may be as large as 10 inches in some streams (Beech Creek, for example).

Downstream smolt movement is quite rapid, taking 45 days or less for smolts to reach the ocean from upstream rearing areas. Smolts migrate to the ocean with very determined swimming and feeding along the way. While in migration corridor habitat of the lower John Day River (Below Kimberly, RM 185, see Table B1), smolts generally stay within the river thalweg, using water depth and turbidity for cover (Unterwegner, 1999, personal communication). Smolts may stop and feed along backwaters and edges occasionally, or feed in the main current. Most smolts will reach the ocean by May, June, or July depending on the time of migration.

John Day summer steelhead typically return after one or two years in the Pacific ocean (termed 1-salt or 2-salt steelhead). About 80 percent of the John Day steelhead run are two-salt fish. Typical of other summer steelhead stocks, very few steelhead return to spawn a second time in the John Day River Basin.

Table B1. John Day River Segments and habitat utilization by steelhead trout*

River Segment	Steelhead Habitat Use
John Day River, Mouth (RM 0.0) to Kimberly (RM 185.0)	Migratory Corridor (No Rearing Habitat)
John Day River, RM 185.0 to RM 240.0 (Mount Vernon)	Juvenile Winter Rearing Habitat
John Day River, Mount Vernon (RM 240) to City of John Day (RM 248)	Juvenile Summer Rearing Habitat
John Day River, City of John Day (RM 248 to Headwaters)	Adult Spawning, Juvenile Rearing Habitat
South Fork John Day River, Mouth (RM 0.0) to Izee Falls (RM28.5)	Adult Spawning, Juvenile Rearing Habitat. No steelhead access above falls.
North Fork John Day River, Mouth (RM 0.0) to Camas Creek (RM 57.0)	Juvenile Winter Rearing Habitat. No Prineville BLM lands above RM 50.5
Middle Fork John Day River, Mouth (RM 0.0) to Highway 395 (RM 24.0)	Juvenile Winter Rearing Habitat
Middle Fork John Day River, Highway 395 (RM 24.0) to Headwaters	Adult Spawning, Juvenile Rearing Habitat

*Source: Unterwegner, Personal Communication

Chilcote (1998), assessed abundance, trend, and recruitment patterns for all five populations of John Day steelhead: Lower Mainstem (below Picture Gorge, RM 204), Upper Mainstem (above Picture Gorge), North Fork, Middle Fork, and South Fork. The general pattern in abundance for these populations shows a low point during the late 1970s followed by an increasing trend leading to peak counts during the late 1980s (Table B2). Recently, all populations have declined to lows similar to those observed in the late 1970s.

Table B2. Index of steelhead spawners per stream survey mile for the five populations of John Day summer steelhead (1974-1997).

Year	Lower Mainstem	Upper Mainstem	North Fork	Middle Fork	South Fork
1974	4.2	5.4	5.3	5.8	13.1
1975	12.2	8.1	7.4	8.5	18.8
1976	5.7	7.4	5.8	12.8	10.4
1977	0.7	9.2	3.8	10.3	12.7
1978	7.0	6.1	2.0	8.2	7.3
1979	0.3	0.9	1.9	1.6	3.8
1980	5.3	6.1	2.7	3.1	7.2
1981	5.8	3.8	3.2	6.2	5.7
1982	3.5	4.1	4.3	5.8	9.9
1983	3.9	8.2	5.1	4.1	12.0
1984	4.5	6.5	2.3	4.7	8.1
1985	7.0	10.9	9.3	7.7	15.4
1986	20.7	16.6	8.5	16.5	13.8
1987	21.9	16.3	9.6	9.7	18.4
1988	15.8	20.9	7.8	17.3	19.4
1989	6.5	5.8	1.5	5.8	3.5
1990	5.1	5.8	1.6	2.3	8.4
1991	3.8	3.5	1.8	3.8	4.2
1992	5.0	10.1	5.1	15.9	5.4
1993	1.8	2.3	2.0	3.5	3.2
1994	1.2	4.6	2.3	4.7	5.8
1995	1.8	1.4	1.6	1.6	2.8
1996	3.0	2.3	4.7	2.7	3.1
1997	3.0	2.2	2.6	3.0	1.9

The Lower Mainstem, Upper Mainstem, and South Fork populations have remained depressed for several years (Figures 24, 25, and 28). During the last four years, these populations have been less than half of estimated equilibrium levels. While equally low or lower spawner densities were estimated in the 1970s, the levels observed in the 1990s cover a longer period of time (Chilcote, 1998).

Plots of spawner density indices for the Upper Mainstem (Figure 25), North Fork (Figure 26), and Middle Fork (Figure 27), populations all show a spike in abundance for the 1992 spawning year. A similar pattern was not observed in the Lower Mainstem and is indistinct in the South Fork (Chilcote, 1998).

According to Chilcote (1998), the spawner abundance analysis suggests the Lower Mainstem and South Fork John Day populations are the least healthy within the basin. The South Fork population in particular shows a decline in spawner densities large enough to warrant concern about its likely persistence.

Except for the South Fork John Day population, there are no obvious signs that steelhead populations in the basin are reproductively failing or at critically low population levels. The underlying recruitment relationship for the John Day populations suggest that their capacity to respond to environmental changes is still intact. Data suggest that much of the decline in recent

years has been due to poor smolt to adult survival and not population failure within basins. Assuming this pattern is cyclic, the observed declines can be expected to reverse in the next three to five years (Chilcote, 1998).

The South Fork population appears to warrant an extirpation warning. There has been a large decline (-50%) in the six-year moving average abundance of wild steelhead in this population over the last 18 years (Chilcote, 1998). The reason for this exceptional decline in the South Fork population as compared to other John Day populations is unknown (Unterwegner, 1999 personal comm.). Riparian conditions in the South Fork watershed have improved significantly in the last 20 years, particularly on BLM managed lands.

Although the North Fork population appears to be returning to expected equilibrium abundance levels, all four remaining populations in this basin remain depressed. Recruitment modeling suggests the resiliency of John Day steelhead populations is relatively intact. However, the data do not support a clear conclusion that steelhead densities in this basin have bottomed-out and are returning to equilibrium levels (Chilcote, 1998).

Hatchery fish are not released into any of the five populations examined in the John Day Basin. In addition, this basin has the distinction of being one of the few large basins in Oregon with no history of a steelhead hatchery program. Although stray hatchery steelhead are caught in the lower mainstem, especially in the fishery below Cottonwood Bridge (RM 40), they have been rare in the upper basin. It is estimated that hatchery fish comprise less than 5 percent of the naturally spawning population (Chilcote, 1998).

Natural Production Constraints

Many tributaries utilized by wild summer steelhead for spawning and rearing experience low flows and high temperatures, both of which are related to stream bank degradation, poor riparian habitat conditions, and irrigation withdrawals. Stream bank degradation is a problem throughout the subbasin both in tributaries and portions of the mainstem.

Recreational harvest of wild summer steelhead in the JDR basin may have had a constraining effect on population size. Wild adult summer steelhead in the JDR basin have been protected from recreational harvest by regulation since September of 1995. Available data suggest that most wild juvenile migrants are 7 inches or less in length, and are protected from harvest by the 8 inch minimum length limit that has been in effect since 1997. Prior to 1997, the minimum length for harvest on trout was 6 inches. Bait fishing is allowed in all areas open to angling in the basin.

Based on studies from other river basins in the Pacific Northwest, there is speculation that recreational hooking and handling mortality of wild steelhead adults by hook and line anglers may contribute nearly 10 percent adult mortality of all caught and released fish (Unterwegner, 1999, personal comm.). This recreational angler induced mortality may be a significant management concern.

Natural events within the basin also constrain natural production.

Passage blocked naturally by Izee Falls on the South Fork John Day River (RM 28.5) prevents steelhead production in this segment of the South Fork and numerous tributaries to it. Several unscreened irrigation diversions in the Upper John Day subbasin contribute to losses of juvenile summer steelhead.

Prolonged drought conditions that started in the subbasin in 1984 or 1985 and continued more or less until 1994, exacerbated mainstem and tributary habitat deficiencies and may have contributed significantly to declining summer steelhead populations in the JDR basin.

A variety of man's activities outside and within the basin constrain natural production.

Passage conditions for both juvenile and adult anadromous fish at Columbia River mainstem dams contribute to declines in wild summer steelhead. The Dalles Dam, which all John Day River migrants must pass, has one of the lower rates of juvenile salmonid passage efficiency for mainstem Columbia dams due to a lack of turbine screening and effective juvenile bypass facilities. Bonneville Dam, particularly Powerhouse 2, does not have particularly effective juvenile turbine screening. Increased spill of water at both The Dalles and Bonneville dams to increase survival of Federal Endangered Species Act listed Snake River salmon should result in better survival of wild lower Deschutes River summer steelhead at these dams. Longer travel time for juveniles through dam created reservoirs in the Columbia, increased water temperature in the reservoir environment, and increased predation near mainstem dams all contribute to increased losses of juvenile and adult wild summer steelhead.

Harvest of wild summer steelhead by treaty tribal fisheries in the mainstem Columbia River is governed by the Columbia River Fish Management Plan (CRFMP 1987). This plan, agreed to by the four treaty tribes, the United States of America, and the states of Oregon, Washington, and Idaho, directs mainstem harvest decisions on wild summer steelhead using run sizes at Bonneville Dam. Treaty tribal impacts to wild summer steelhead are not to exceed 15% of the Group A (those crossing Bonneville Dam April 1 to August 25) wild escapement and 32% of the Group B (those crossing Bonneville Dam August 26 to October 31) wild escapement during fall treaty seasons. Harvest of wild summer steelhead by treaty tribal fisheries in the mainstem Columbia River has been and will continue to be a source of mortality to JDR basin origin wild summer steelhead.

Habitat problems affecting most inland steelhead trout populations include irrigation diversions and livestock grazing. These activities can modify river and stream channels; remove riparian vegetation; block migration routes seasonally; decrease summer flows; and increase summer water temperatures. Some populations have retreated to headwater areas as a result of these activities, causing extensive population fragmentation and declines in numbers (Kostow, 1995)

Natural events outside the subbasin also constrain natural production in the subbasin. According to Chilcote (1998), all seven Oregon populations in the Middle Columbia ESU (Lower John Day, Upper John Day, S. Fork John Day, N. Fork John Day, M. Fork John Day, Deschutes River, and the Umatilla River) appear to share a pattern of relatively high abundance

during the mid-1980s, followed by a decline in the 1990s. This decline coincides with decreases in smolt-to-adult survival as estimated from hatchery fish released from Round Butte Hatchery. Because of this observation and the fact the decline in abundance is shared by all populations, the best explanation for the downward trend is common survival factors, most likely mainstem Columbia passage and ocean survival (Chilcote, 1998).

According to Taylor (1997), scientists have found that chinook salmon returns in the Northwest show long-term trends which closely follows the climate cycles. Anderson (1995), used the "Pacific Northwest Index" (PNI) to distinguish cool, wet periods from warm, dry ones from data which goes back to 1896. Anderson then compared PNI with Columbia River spring chinook salmon returns data which goes back to 1940. The correlation between spring chinook and PNI is very strong, as indicates that salmon returns increase during cool, wet periods and decline during warm, dry ones. The period 1976-1994 was considered a "Generally dry and warm" cycle. While there are undoubtedly human-induced effects on the fish (including dam construction and spawning/rearing habitat degradation), natural variability from climate cycles may be a very significant influence (Taylor, 1997)

There are indications that global ocean and atmosphere conditions are the cause of long-term climate variations which affect precipitation trends in the Northwest. There is also evidence that a switch in regimes occurred in late 1994, and that conditions which tend to yield wet, cool winters in the Northwest have returned (Taylor, 1997).

Ocean productivity is known to be cyclic and responsible for trends in anadromous species survival and abundance. Natural variation in ocean productivity and subsequent survival of summer steelhead in the ocean environment may be an important factor in JDR basin summer steelhead abundance. Protection and enhancement of subbasin habitat and summer steelhead populations remains, however, very important.

Low flow and high water temperatures in the Columbia River during drought years magnify mainstem dam passage problems for both adult and juvenile summer steelhead.

General Baseline Conditions for the entire John Day River Basin

Riparian Plant Community Conditions

Riparian areas generally make up less than 1 percent of the public lands in the planning area. These areas contribute to biological diversity, streambank and channel stability, and water quality, yet are often the most heavily utilized. Recreation, livestock, agriculture/irrigation, roads, and wildlife all contribute to the total use of these fragile areas. (Two Rivers RMP, 1985). Ecological condition and trend data for riparian areas was collected in the John Day Basin BLM managed lands. Since that time, with the implementation of the Strategy for Salmon 1992, and PACFISH 1994, many riparian areas have management in place to protect and enhance their condition.

Upslope Plant Communities

The planning area generally falls within the Columbia Basin physiographic province. The vegetation is predominately big sagebrush/bunchgrass and bunchgrass, with some communities dominated by rabbitbrush and snakeweed. The rolling hills and plateaus above the drainages are usually dominated by big sagebrush on deeper soils, with low and/or stiff sagebrush on shallower soils. Bunchgrass dominated communities are also found on some of the plateaus and on most of the steep slopes of the river canyons. Public lands in the upper subbasins are dominated by ponderosa pine, Western juniper and big sagebrush vegetation zones

Spawning Areas

Summer steelhead spawning areas on public lands cover much of the basin. Some steams with documented spawning include tributaries of the Upper Mainstem John Day River (Dixie, Standard, Indian, Canyon, and Cottonwood Creeks), the South Fork John Day River (Deer and Murderers Creeks), the North Fork John Day River (Rudio Creek), and the Lower John Day River (Bridge, Bear, Gable, Ferry Canyon, Little Ferry Canyon, Pine Hollow, Long Hollow, and Jackknife Canyon.

Habitat Conditions and Trends

Conditions of the mainstem John Day River, its forks and its tributaries are in various stages of recovery and trends for all life stages of summer steelhead. Fish habitat condition, and trend surveys were conducted in 1980-81 on most perennial and fish bearing streams in the basin. Some surveys were repeated in 1989-1990.

Baseline Conditions for the Upper John Day Subbasin 17070201.

Introduction

The Upper John Day watershed encompasses 1.37 million acres from the headwaters of the John Day River upstream of Prairie City to the mouth of the North Fork John Day River at Kimberly, at River Mile 185. BLM manages about 145,635 acres within the subbasin. Major tributaries within the subbasin include Canyon, Beech, Rock, and Johnson Creeks and the South Fork John Day River. Streams on this list generally carry perennial flows, based on U.S.G.S. Quadrangle maps or direct observations. (See Table 1).

Table 1. **Streams with BLM ownership, total number of stream segments on BLM parcels, what it flows into, and current steelhead status.**

Stream Name	Public Miles	# Of Stream Segments	Tributary to	Steelhead Waters
John Day River	2.6	6	Columbia River	Winter Juvenile Rearing
Dads Creek	0.3	1	John Day River	Spawning and Rearing
Dixie Creek	2.4	3	John Day River	Spawning and Rearing
Standard Creek	1.1	3	Dixie Creek	Spawning and Rearing
West Fork Standard Cr.	0.9	1	Standard Creek	Spawning and Rearing
Comer Creek	0.2	2	Dixie Creek	Spawning and Rearing
Bull Run Creek	0.8	1	Dixie Creek	No
Bear Creek	0.6	2	John Day River	Spawning and Rearing
Indian Creek	0.4	1	John Day River	Spawning and Rearing
W. Fk Little Indian Cr.	0.2	2	Indian Creek	No
Pine Creek	0.3	2	John Day River	Spawning and Rearing
Bear Gulch	0.3	1	Pine Creek	No
Grub Creek	0.3	1	John Day River	Spawning and Rearing
Little Pine Creek	1.6	2	John Day River	Spawning and Rearing
Canyon Creek	1.4	3	John Day River	Spawning and Rearing
Sheep Gulch	1.0	1	Canyon Creek	No
Hanscombe Cr. trib	0.2	1	Hanscombe Cr.	No
Beech Creek	0.2	2	John Day River	Spawning and Rearing
Capsuttle Creek	0.4	1	Riley Creek	No
McClellan Creek	0.1	1	John Day River	Spawning and Rearing
Big Canyon	0.9	1	Fields Creek	No
Warrens Creek	1.0	1	John Day River	No
West Dry Creek	0.4	1	Dry Creek	No
Marks Creek	0.4	1	John Day River	No
Flat Creek	0.5	1	John Day River	Spawning and Rearing
Franks Creek	5.1	3	John Day River	1.5 miles Spawning and Rearing, 3.6 miles No (barrier)
Belshaw Creek	0.1	1	John Day River	Spawning and Rearing
Ferris Creek	1.2	3	John Day River	No
Sheep Gulch	4.0	1	John Day River	No
Battle Creek and tribs	5.2	3	John Day River	No, but Potential Habitat
Cottonwood Creek	1.4	4	John Day River	Spawning and Rearing
Dyke Creek	0.4	1	Cottonwood Cr.	No
Day Creek	0.6	2	Cottonwood Cr.	No, blocked on private land
S. Fk. John Day River	10.2	9	John Day River	Spawning and Rearing
S. Fk. John Day River	5.2	12	John Day River	No, access blocked by falls

Johnson Creek	0.5	1	SFJDR	No
Smoky Creek	1.6	2	SFJDR	No, access blocked by culvert
Tunnel Creek	0.2	1	SFJDR	No
Oliver Creek	1.1	1	SFJDR	No
Youngs Creek	0.6	2	SFJDR	No
Murderers Creek	0.4	1	SFJDR	Spawning and Rearing
Cabin Creek	0.6	1	Murderers Cr.	Spawning and Rearing
Frazier Creek	1.2	1	Wind Creek	0.2 miles Spawning and Rearing, 1.0 blocked by falls
Martin Creek	1.6	3	SFJDR	No
Cougar Gulch	2.0	3	SFJDR	Spawning and Rearing
Deer Creek	3.0	1	SFJDR	Spawning and Rearing
Round Creek	1.4	1	Deer Creek	No
Dugout Creek	0.6	1	Deer Creek	No
Sunflower Creek	1.0	1	Deer Creek	No
Wildcat Creek	0.5	1	Sunflower Cr.	No
Indian Creek	1.3	3	SFJDR	No
Sock Hollow	0.7	3	SFJDR	No
Dry Soda Creek	0.6	2	SFJDR	No
Abbott Creek	1.5	1	SFJDR	No
Poison Creek	0.3	1	SFJDR	No
Flat Creek	1.2	2	SFJDR	No
Utley Creek	1.6	2	Flat Creek	No
Delles Creek	0.4	1	Corral Creek	No
Packwood Creek	0.2	1	Brisbois Creek	No
Tamarack Creek	0.2	1	Antelope Creek	No
Rock Creek	0.4	1	John Day River	Migration Corridor
Unamed trib	1.2	1	Rock Creek	No
Birch Creek	0.3	1	Rock Creek	Spawning and Rearing
West Birch Creek	2.0	3	Birch Creek	0.9 mi. Spawning and Rearing, 1.1 mi. no access
West Birch Creek trib.	0.7	1	W. Birch Creek	No
East Birch Creek	0.2	2	Birch Creek	No access
Squaw Creek	1.0	2	John Day River	Spawning and Rearing
Indian Creek	0.2	1	Squaw Creek	Spawning and Rearing
Frank Creek	0.6	2	Squaw Creek	No
Buckhorn Creek	1.0	3	Squaw Creek	Potential Spawning and Rearing
Willow Creek	0.7	1	Rock Creek	Spawning and Rearing
Fopiano Creek	0.4	2	Willow Creek	Spawning and Rearing
Dick Creek	0.8	2	John Day River	No
Johnny Creek	2.0	2	John Day River	No
Bull Canyon	1.1	1	John Day River	No
Deep Creek	0.5	1	John Day River	No
Harry Creek	0.9	4	John Day River	No
McGinnis Creek	1.6	1	John Day River	No
Branson Creek	3.8	2	John Day River	Potential Spawning and Rearing
Bone Creek	0.5	1	John Day River	No
Rose Creek	0.4	1	John Day River	No
Spring Creek	0.3	1	John Day River	No
Holmes Creek	1.7	4	John Day River	1.0 mi. Spawning and Rearing, 0.8 No.
Burnt Corral Creek	1.0	2	Holmes Creek	0.7 mi. Spawning and Rearing, 0.3 mi. No
Johnson Creek	1.4	5	John Day River	1.3 mi. Spawning and Rearing

Hide and Seek Creek	0.7	2	Johnson Creek	No
Unnamed Trib.	0.6	1	Johnson Creek	No
China Hat Creek	0.3	1	Johnson Creek	No

Environmental Baseline

Description of Ratings of Baseline Indicators for Little Pine Creek. *This specific rating is for developing an effects analysis of the South Little Canyon Mountain timber sale.*

Water Temperature: No water temperature data is available for Little Pine Creek and its tributaries. However, from professional judgment, this stream is believed to meet the criteria of 57^{o}F for spawning, and 64^{o}F for summer rearing. **Properly Functioning**

Sediment/Turbidity: There is no sediment data on this stream. Turbidity generally is low. Stream crossings/fords are currently a source of sediment delivery to Little Pine Creek. Professional judgement from direct observations would rate these streams **At Risk**

Chemical Contamination/Nutrients: Nearly all reaches are above agriculture areas. No CWA 303d listed reaches. Professional judgement would rate these streams as **Properly Functioning**

Physical Barriers: There are no known physical barriers to fish passage in Little Pine Creek. However, steelhead use of the stream has not been confirmed. Westslope cutthroat trout have been found in this reach. **Properly Functioning**

Substrate Embeddedness: Informal surveys rated embeddedness at 20-30 percent in Little Pine Creek. Professional judgement would rate this indicator as **At Risk.** This is due to direct observations and good streambank stability noted on these stream segments.

Large Wood: There is no quantified large wood data for these streams. Based on direct observations, Little Pine Creek is rated **Properly Functioning**. This is due to ample amounts of LWD observed in the stream and good overstory of trees. Although LWD pieces are not always 35 feet in length, they function well in this small stream.

Pool Frequency: Based on direct observations of this stream, pool frequency would be considered **Not Properly Functioning**.

Pool Quality: There is no sediment data on Little Pine Creek. Some relatively deep pools occur (the stream is about 2-4 feet in width on average), and generally have good cover and cool water. Pools probably have moderate volume reductions from fine sediments. Professional judgement from direct observations would rate this indicator as **At Risk.**

Off-Channel Habitat: Due to the small size and moderate to steep gradient of Little Pine Creek, little to no off channel habitat is expected to occur. **Not Applicable**

Refugia: Little Pine Creek flows out of National Forest Wilderness Area onto BLM lands. It has good water temperatures, and well vegetated streambanks. Professional judgement would rate the stream individually, as too small to maintain viable sub-populations. **At Risk**
Wetted Width/Max Depth Ratio: There is no current width to depth ratio data available for these streams. Professional judgment from direct observations would rate this stream as **Properly Functioning.**

Streambank Condition: Based direct observations, this indicator is **Properly Functioning.**

Floodplain Connectivity: Condition rated **At Risk**, from direct observation and professional judgment. The stream has downcut 1-2 feet in some areas.

Changes in Peak Flow/Base Flow: Flow data does not exist for these streams. Professional judgement estimates condition as **At Risk,** from direct observations of the stream channel.

Drainage Network Increase: Increases of the drainage network are generally limited to road interaction with streams. Rills or gullies associated with roads and ATV trails are evident. Common off road use occurs in the Little Pine Creek drainage. Direct erosion and sediment delivery to the stream is occurring at two stream crossings/fords. Because of this, condition is rated **Not Properly Functioning**

Road Density and Location: Estimated average road densities for all BLM lands are between 2-3 mi/mi^2, with some valley bottom roads. **Functioning at Risk**

Disturbance History: Most BLM forested tracts have not had significant timber harvest, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

Riparian Reserves: To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

Description of Ratings of Baseline Indicators for Dads, Dixie, Standard, W. Fork Standard, Comer, Bull Run, Bear, Indian, W. Fork Little Indian, Pine, Bear Gulch, Grub, Little Pine, Canyon, Sheep Gulch, Hanscombe tributary, Beech, Capsuttle, McClellan, Big Canyon, West Birch, West Birch tributary, and East Birch Creeks.

Water Temperature: From data and professional judgment, most of the creeks in this matrix list are known or suspected to meet the criteria of 57^{o}F for spawning, and 64^{o}F for summer rearing. Water temperatures have been monitored in Dixie, Standard, Canyon, and Indian Creeks. **Properly Functioning**

Sediment/Turbidity: There is no sediment data on these streams except Dixie and Standard Creeks (both are properly functioning). Turbidity generally is low. Professional judgement from direct observations would rate these streams as **Properly Functioning or At Risk**

Chemical Contamination/Nutrients: Nearly all reaches are above agriculture areas. No CWA 303d listed reaches. Professional judgement would rate these streams as **Properly Functioning**

Physical Barriers: Physical barriers below irrigation diversions exist on Dixie and Standard Creeks, and do not allow fish passage at base flows. **At Risk**

Substrate Embeddedness: There is little substrate embeddedness data available for these streams. Professional judgement would rate them as **At Risk.** This is due to direct observations and good streambank stability noted on most stream segments.

Large Wood: There is no quantified large wood data for these streams. Professional judgement would rate them as **Properly Functioning**. This is due to ample amounts of LWD observed in many of these stream segments. Although LWD pieces are not always 35 feet in length, they function well in these small streams.

Pool Frequency: Based on direct observations of these streams, pool frequency would be considered **Not Properly Functioning**.

Pool Quality: There is no sediment data on these streams except Dixie and Standard Creeks (both have low surface fine levels). Deep pools are uncommon, but generally have good cover and cool water and probably have moderate volume reductions from fine sediments. Professional judgement from direct observations would rate these streams as **Properly Functioning or At Risk.**

Off-Channel Habitat: Due to the small size and moderate to steep gradient of these stream , little to no off channel habitat is expected to occur. **Not Applicable**

Refugia: Many of these streams segments are adjacent to National Forest lands or Federal Wilderness. Streams generally are well buffered by intact riparian vegetation communities. Professional judgement would rate the stream segments individually as too small to maintain viable sub-populations, but sufficient in size if grouped with additional stream segments on National Forests. **Properly Functioning or At Risk**

Wetted Width/Max Depth Ratio: There is no current width to depth ratio data available for these streams. Professional judgment from direct observations would rate them as **At Risk.**

Streambank Condition: Based on review of 1980 and 1989 riparian inventories and direct observations, most streams appear to be **At Risk.**

Floodplain Connectivity: Past mining, road building, grazing, and logging activities along these streams has reduced the linkage of wetland, floodplains, and riparian areas from main channels. Condition rated **At Risk**, from direct observation and professional judgment.

Changes in Peak Flow/Base Flow: Flow data is either not available or does not exist for most of these streams. BLM peak crest gauges are installed in Dixie and Standard Creeks. Based on the highly mixed and fragmented land ownership pattern of BLM/private lands it is difficult to assess this watershed influenced habitat parameter. Professional judgement estimates condition as **At Risk**.

Drainage Network Increase: Increases of the drainage network are generally limited to road interaction with streams. Rills or gullies associated with roads and ATV trails are evident. Common off road use occurs in the Dixie/Standard and Little Pine Creek drainages. Because of this, condition is rated **Not Properly Functioning**

Road Density and Location: Estimated average road densities for all BLM lands are between 2-3 mi/mi^2, with some valley bottom roads. **Functioning at Risk**

Disturbance History: Most BLM forested tracts have not had significant timber harvest, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

Riparian Reserves: To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

Description of Ratings of Baseline Indicators for the Following Streams; John Day River, Warrens, West Dry, Marks, Flat, Franks, Belshaw, Ferris, Sheep Gulch, Battle and tribs, Cottonwood, Dyke, Day, Rock and unnamed trib., Birch, Squaw, Indian, Frank, Buckhorn, Willow, Fopiano, Dick, Johnny, Bull Canyon, Deep, Harry, McGinnis Branson, Bone, Rose, Spring, Holmes, Burnt Corral, Johnson, Hide and Seek, unnamed trib., and China Hat Creeks.

Water Temperature: None of the creeks listed for this matrix, with the exception of Cottonwood and Battle Creeks, have been monitored for temperature. All likely exceed the criteria of 64^{o}F for migration and rearing habitat. **Not Properly Functioning**

Sediment/Turbidity: There is no sediment data for these streams. Turbidity generally is low to moderate. Professional judgement from direct observations would rate these streams as **At Risk**

Chemical Contamination/Nutrients: Nearly all reaches are above agriculture areas. No CWA 303d listed reaches. Professional judgement would rate these streams as **Properly Functioning or At Risk**

Physical Barriers: Battle Creek reportedly is intercepted into a irrigation canal near the streams mouth (below BLM). There are no other known man-made barriers for the streams listed in this matrix. **Properly Functioning**

Substrate Embeddedness: There is no substrate embeddedness data available for the creeks listed for this matrix. Professional judgement would put it in either the **At Risk or the Not Properly Functioning** category. This is due to direct observations of land management impacts on BLM and upstream private lands.

Large Wood: There is no quantified large wood data available for the creeks listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the lack of instream wood observed and that some streams are not in forested areas and naturally will not attain matrix standards..

Pool Frequency: Recent pool frequency data is not available for the creeks listed for this matrix. Professional judgement would put them in the **Not Properly Functioning** category. This is based on 1980 stream surveys of Rock, Birch, Squaw, Indian, Willow, Fopiano, Day, and Johnson Creeks and also direct observations made.

Pool Quality: There is no sediment data available for the creeks listed for this matrix. Professional judgement would put it in either the **At Risk or the Not Properly Functioning** category, based on non
comprehensive observations made.

Off-channel Habitat: No information is available rate these streams. Based on direct observations, condition is rated as **At Risk.**

Refugia: Based on professional judgement these stream segments are not of sufficient length, size, number and connectivity to maintain viable populations or sub-populations or serve as refugia. These segments generally are scattered among large portions of private lands, and not adjacent to other large stream segments on National Forest lands. **Not Properly Functioning**

Wetted Width/Max Depth Ratio: There is no current wetted width/max depth ratio data available for the creeks listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the lack of stability of these systems and also direct observations made.

Streambank Condition: There is no current streambank condition data available for the creeks listed for this matrix. From professional judgement and review of 1980 stream stability surveys, these streams are rated as **At Risk**.

Floodplain Connectivity: Little historic data exists showing the extent of wetlands and the frequency of overbank flows to compare to current conditions. Condition rated **At Risk,** based on direct observation and because of past management.

Changes in Peak Flow/Base Flow: There is little to no flow data available for the creeks listed for this matrix. Professional judgement would put it in the **At Risk** category. This is due to the reduction of perennial grasses and riparian vegetation in some areas that has probably limited the ability of these watersheds to dissipate energy and to store water. This could increase the peak flows on these systems, but would be difficult to measure.

Drainage Network Increase: Increases of the drainage network are generally limited to road interaction with streams. No data exists to show what changes may have occurred. Because some road fords occur through these streams, this condition is rated **At Risk.**

Road Density and Location: Estimated average road densities for all BLM lands are between 2-3 mi/mi^2, with roads along most stream segments. **Functioning at Risk**

Disturbance History: Most BLM forested tracts have not had significant timber harvest, so past disturbance (% ECA) is less than 15%. Generally harvesting has not been concentrated in unstable or riparian areas. **Properly Functioning**

Riparian Reserves: To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

Description of Ratings of Baseline Indicators for the South Fork John Day River and tributaries; Johnson, Smoky, Tunnel, Oliver, Youngs, Murderers, Cabin, Frazier, Martin, Cougar Gulch, Deer, Round, and Dugout Creeks.

Water Temperature: From data and professional judgment, most of the creeks in this matrix list are known or suspected to meet the criteria of 57^{o}F for spawning, but not 64^{o}F for summer rearing. Water temperatures have been monitored in the South Fork John Day River, Murderers and Deer Creeks. **At Risk**

Sediment/Turbidity: Percent surface fines data has been collected on Deer and Murderers Creeks. Turbidity is high, from direct observations, particularly on the South Fork John Day. Professional judgement from data and direct observations would rate these streams as **Not Properly Functioning.** High sediment loads are present in the SFJDR drainage during peak runoff and intense thunderstorms (OWRD, 1986). Livestock grazing, timber harvest/road construction, farm practices, stream channelization, and natural conditions have contributed to these conditions.

Chemical Contamination/Nutrients: The upper South Fork John Day River is dominated by private agriculture and grazing activities near the river, but water contamination levels is unknown. Tributary streams in this matrix are not influenced by agriculture activities. No CWA 303d listed reaches. Professional judgement would rate these streams as **At Risk**

Physical Barriers: All steelhead access is blocked into Smoky Creek by an impassable culvert. Replacement of culvert to restore steelhead access planned for summer 1999. **Not Properly Functioning**

Substrate Embeddedness: There is little substrate embeddedness data available for these streams. Professional judgement would rate them as **Not Properly Functioning.** This is due to direct observations and high turbidity levels in the South Fork.

Large Wood: There is no quantified large wood data for these streams. Professional judgement would rate them as **Not Properly Functioning**. This rating based on professional judgement form direct observations. Several stream segments are not in forested areas, and may not have potential to reach this criteria range.

Pool Frequency: Based on direct observations of these streams, pool frequency would be considered **Not Properly Functioning**.

Pool Quality: Deep pools are fairly common, generally with adequate cover, but are moderately reduced by fine sediments, especially in the SF John Day River. Professional judgement from direct observations would rate these streams as **At Risk.**

Off-Channel Habitat: Based on direct observations of some backwater areas and professional judgement, this is rated **At Risk**.

Refugia: Many of these streams segments could be potential habitat refugia. However, upstream influences (particularly on the South Fork John Day) are affecting stream temperatures and turbidity/sediment levels, which is limiting habitat potential. Riparian reserves are fairly intact, and generally improving. Professional judgement would rate the stream segments as **At Risk**

Wetted Width/Max Depth Ratio: There is no current width to depth ratio data available for these streams. Professional judgment from direct observations would rate them as **At Risk.**

Streambank Condition: Based on review of 1980 and 1989 riparian inventories and direct observations, most streams appear to be **At Risk.**

Floodplain Connectivity: Past road building, grazing, and logging activities along these streams has reduced the linkage of wetlands,, floodplains, and riparian areas from main channels. Condition rated **At Risk**, from direct observation and professional judgment.

Changes in Peak Flow/Base Flow: Flow data has been collected on the South Fork John Day, Murderers Creek and Deer Creek. Past grazing activities have probably limited the ability of these watersheds to dissipate energy and store water. Upland conditions are generally improving now. Professional judgement estimates condition as **At Risk**.

Drainage Network Increase: Increases of the drainage network are generally limited to road interaction with streams. Based on roads commonly adjacent to streams and some road fords, this condition is rated **At Risk**.

Road Density and Location: Estimated average road densities for all BLM lands are less than 2 mi/mi^2, but valley bottom roads are common. **Functioning at Risk or Not Functioning Properly**

Disturbance History: Most BLM forested tracts have not had significant timber harvest, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

Riparian Reserves: To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

Description of Ratings of Baseline Indicators for the South Fork John Day River and tributaries; Sunflower, Wildcat, Indian, Sock Hollow, Dry Soda, Abbott, Poison, Flat, Utley, Delles, Packwood, and Tamarack Creeks. *Streams in this list are upstream of a natural barrier to steelhead trout (Izee Falls on the SF John Day River), and are occupied by redband trout and non-game species only.*

Water Temperature: Streams in this list are upstream of natural barrier to steelhead. Water temperatures have been monitored in the SF John Day River, Indian, Sunflower, and Flat Creeks. **Not Properly Functioning**

Sediment/Turbidity: There is no sediment data available for the creeks listed for this matrix. Professional judgement would put it in either the **At Risk or Not Properly Functioning** category. This is due to the direct observations made.

Chemical Contamination/Nutrients: There is no chemical or nutrient data available for the creeks listed for this matrix. Professional judgement would put it in either the **At Risk** category.

Physical Barriers: Streams in this list are upstream of natural barrier to steelhead. **Not Applicable**

Substrate Embeddedness: There is no substrate embeddedness data available for the creeks listed for this matrix. Professional judgement would put it in either the **At Risk or Not Properly Functioning** category. This is due to direct observations and high turbidity levels in the South Fork.

Large Wood: There is no large wood data available for the creeks listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the lack of instream wood observed.

Pool Frequency: There is no current pool frequency data available for the creeks listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is because it does not meet the pool frequency standards.

Pool Quality: There is no sediment data available for the creeks listed for this matrix. Professional judgement would rate this condition as **At Risk**. This is due to direct observation of volume reduction by fine sediments.

Off-channel Habitat: Based on direct observations of some backwater areas and professional judgement, this is rated **At Risk**.

Refugia: Streams in this list are upstream of natural barrier to steelhead. **Not Applicable**

Wetted Width/Max Depth Ratio: There is no current wetted width/max depth ratio data available for the creeks listed for this matrix. Professional judgement would put it in the **At Risk** category.

Streambank Condition: There is no current streambank condition data available for the creeks listed for this matrix. Professional judgement, direct observations, and review of riparian habitat inventories would categorize it as **At Risk**.

Floodplain Connectivity: Although little historic data exists showing the extent of wetlands and the frequency of overbank flows to compare to current conditions. Professional judgement would put it in to the **Properly Functioning to Functioning at Risk** category. This is due to the fair stability of these systems.

Changes in Peak Flow/Base Flow: Flow data has been collected on the South Fork John Day River. Past grazing activities have probably limited the ability of these watersheds to dissipate energy and store water. Upland conditions are generally improving now. Professional judgement estimates condition as **At Risk**.

Drainage Network Increase: Increases of the drainage network are generally limited to road interaction with streams. Based on roads commonly adjacent to streams and some road fords, this condition is rated **At Risk**.

Road Density and Location: Road densities are less than 3 mi/mi^2 with some valley bottom roads. **Functioning at Risk.**

Disturbance History: Most BLM forested tracts have not had significant timber harvest, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

Riparian Reserves: To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these stream segments. **Not Applicable**

Baseline Conditions for the North Fork John Day Subbasin #17070202

Introduction

The North Fork John Day subbasin encompasses about 1.18 million acres. Prineville District BLM manages about 35,350 acres within the subbasin, from the mouth to the Umatilla/Grant County line (RM 51.4). Major tributaries within the subbasin include Granite, Desolation, Camas, Potamus, Big Wall, Cottonwood, and Rudio Creeks, and the Middle Fork John Day River. Streams on this list generally carry perennial flows, based on U.S.G.S. Quadrangle maps or direct observations. (See Table 2).

Table 2. Streams with BLM ownership, total number of stream segments on BLM parcels, what it flows into, and current steelhead status.

Stream Name	Public Miles	# Of Stream Segments	Tributary to	Steelhead Waters
North Fork John Day	15.0	20	John Day River	Winter Rearing
Sulphur Gulch	1.1	2	NFJDR	No
Hunter Creek	0.1	1	NFJDR	Spawning and Rearing
Potamus Creek	0.2	1	NFJDR	Spawning and Rearing
Mallory Ceek	0.1	1	NFJDR	Spawning and Rearing
Graves Creek	0.1	1	Mallory Creek	Spawning and Rearing
Squaw Creek	0.3	1	NFJDR	No
Cabin Creek	0.3	1	NFJDR	Spawning and Rearing
Little Wall Creek	0.2	1	Big Wall Creek	Spawning and Rearing
Bacon Creek	0.3	1	Little Wall Creek	Spawning and Rearing
Three-Trough Creek	0.1	1	Little Wall Creek	Spawning and Rearing
Cottonwood Creek	1.7	5	NFJDR	Spawning and Rearing
E. F. Cottonwood Creek	0.7	2	Cottonwood Creek	No
Board Creek	0.4	1	Cottonwood Creek	No
Cougar Creek	0.2	1	Cottonwood Creek	No
Cougar Creek trib	0.5	2	Cougar Creek	No
Squaw Creek	1.7	3	Cottonwood Creek	Spawning and Rearing
W. Fork Cochran Creek	0.6	1	Cochran Creek	No
Rudio Creek	3.2	5	NFJDR	Spawning and Rearing
Gilmore Creek	0.6	1	Rudio Creek	Spawning and Rearing
Straight Creek	0.4	1	Gilmore Creek	Spawning and Rearing
Birch Creek	1.4	2	NFJDR	No

Description of Ratings of Baseline Indicators for the North Fork John Day River

Water Temperature: This segment of the North Fork John Day River (NFJDR) is considered Winter Rearing Habitat only for steelhead. Data reveals that this segment has not meet State of Oregon criteria of 64 degrees F. This standard has been exceeded each year between 1986-95 at the river mouth. **Not Properly Functioning**

Sediment/Turbidity: There is no sediment data available for the NFJDR. Based on direct observation, turbidity is low to moderate. Professional judgement would rate condition as **At Risk**.

Chemical Contamination/Nutrients: No CWA 303d listed reaches. Upstream agriculture influences is minor. **Properly Functioning**

Physical Barriers: There are no man-made barriers on the NFJDR. **Properly Functioning**

Substrate Embeddedness: There is no substrate embeddedness data available for the NFJDR. Professional judgement based on 1996 Riparian Photopoint studies would estimate cobble embeddedness between 20-30 percent. **At Risk**

Large Wood: There is no large wood data available for the NFJDR. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the lack of instream wood observed.

Pool Frequency: There is no current pool frequency data available for the NFJDR. Professional judgement would rate it **Not Properly Functioning**. This is based on infrequent number of pools seen from direct observations.

Pool Quality: Based on direct observations, pools in the NFJDR generally are large and deep (>1 meter), but have moderate reductions of pool volume by fine sediment. Professional judgement would rate condition as **At Risk**.

Off-channel Habitat: Based on general lack of backwater areas observed, this category condition is **Not Properly Functioning**. Past management activities which damaged streambank stability and high flow events likely altered most natural off-channel habitats.
Refugia: Adequate habitat refugia does not exist on the NFJDR. With the current fragmented BLM ownership pattern on the river, even the most proactive restoration efforts are not going to supersede actions from many more private miles on the river. Riparian areas are not sufficient to buffer instream habitats from upstream actions that degrade habitat quality. These refugia are not of sufficient size, number and connectivity to maintain viable populations or sub-populations. **Not Properly Functioning**

Wetted Width/Max Depth Ratio: There is no current wetted width/max depth ratio data available for the NFJDR. Professional judgement would put it in the **Not Properly Functioning** category. This is based on direct observations and review of old stream survey data.

Streambank Condition: There is no current streambank condition data available for the NFJDR. Professional judgement from direct observation and review of 1996 photopoint studies would put it in the **At Risk** category. Bare cobble bars are common along the river, but fairly stable.

Floodplain Connectivity: Little historic data exists showing the extent of wetlands and the frequency of overbank flows to compare to current conditions. Professional judgement from direct observation and review of 1996 photopoint studies would put it in the **At Risk** category. Floodplains are likely seasonally inundated, but riparian vegetation is inadequate to capture/store waters long enough to develop wetland habitats.

Changes in Peak Flow/Base Flow: There is little to no flow data available for the NFJDR. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the reduction of perennial grasses that has probably limited the ability of these watersheds to dissipate energy. The NFJDR above Monument has historically had heavy grazing use on the private lands. Until the early 1990s, grazing on the BLM lands was season long also. This can significantly increase the peak flows on these systems.

Drainage Network Increase: Increases of the drainage network are generally limited to road interaction with streams. Several river fords to access hillslope roads exist. Professional judgement would estimate condition as **At Risk**

Road Density and Location: Estimated average road densities for all BLM lands are 2-3 mi/mi^2, with one road following the NFJDR. Generally this road is outside of the riparian zone, and has little effect on the river. **At Risk**

Disturbance History: BLM forested tracts along the NFJDR have not had any significant timber harvest, so disturbance history (% ECA) is less than 15%. **Properly Functioning**

Riparian Reserves: To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

Description of Ratings of Baseline Indicators for the following tributaries of the NFJDR; Sulphur Gulch, Hunter, Potamus, Mallory, Graves, Squaw, Cabin, Little Wall, Bacon, Three-Trough, Cottonwood, E.F. Cottonwood, Board, Cougar, Cougar trib., Squaw, W. F. Cochran, Rudio, Gilmore, Straight, and Birch Creeks.

Water Temperature: Except for Rudio Creek, BLM has no monitoring data for these streams. Rudio Creek exceeded the criteria of 64^oF with a maximum value of 67^oF in 1994. Professional judgement would estimate that these streams are within 57-60 degrees F during spawning, but that nearly all exceed 64^oF during summer rearing. **At Risk or Not Properly Functioning**

Sediment/Turbidity: There is no sediment data for these streams. From professional judgement and direct observations, this condition would be rated **At Risk**.

Chemical Contamination/Nutrients: No CWA 303d reaches for chemical contamination. Water quality data available for Rudio Creek. Minor amounts of agriculture lands above these stream reaches. **Properly Functioning**

Physical Barriers: There are no known manmade barriers to steelhead migration on these streams. **Properly Functioning**

Substrate Embeddedness: No embeddedness measurements have been made, professional judgement from direct observations would rate this condition **At Risk**.

Large Wood: There is no large wood data available for these streams. Professional judgement from direct observations and review of riparian habitat inventories would rate this condition as **At Risk or Not Properly Functioning.** Most of these streams are within forested habitats and do have potential for large wood recruitment. Rudio Creek may be the exception to this rating, with ample amounts of instream wood, it is likely Properly Functioning.

Pool Frequency: There is no current pool frequency data available for these streams. Professional judgement from direct observations would rate these streams as **Not Properly Functioning**. This is because pool frequency standards are not currently being met.

Pool Quality: Pool quality would be considered **Functioning at Risk** on these streams. This rating based on direct observation of few pools deeper than 1 meter.

Off-Channel Habitat: No information is available to rate these streams. Based on direct observations, condition is rated **At Risk**.

Refugia: Based on professional judgement these stream segments (except Rudio Creek) are not of sufficient length, size, number and connectivity to maintain viable populations or sub-populations or serve as refugia. These segments generally are scattered among large portions of private lands, and not connected to other contiguous stream segments on National Forest lands. **Not Properly Functioning**

Wetted Width/Max Depth Ratio: There is no current width to depth ratio data available for these streams. Professional judgement would rate them **Not Properly Functioning,** because these stream channel types are not expected to have width/depth ratios less than 12.

Streambank Condition: Based on direct observations and review of riparian habitat inventories, most streams appear to be **At Risk.**

Floodplain Connectivity: Adjacent roads to these streams limits floodplain connectivity in areas. **At Risk**

Changes in Peak Flow/Base Flow: No long term flow data is available for these streams. Peak Crest Gauges are have been monitored on Potamus, Mallory, and Cabin Creeks since the mid 1990s. Professional judgement would rate this as **At Risk.**

Drainage Network Increase: Increases of the drainage network are generally limited to road interaction with streams. Based on roads commonly adjacent to streams, and some stream fords, this condition is rated **At Risk**

Road Density and Location: Estimated average road densities are less than 3 mi/mi^2 with many valley bottom roads. **At Risk or Not Properly Functioning**

Disturbance History: Most BLM forested tracts have never been harvested, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

Riparian Reserves: To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

Baseline Conditions for the Middle Fork John Day River Subbasin #17070203

Introduction

The Middle Fork John Day subbasin encompasses about 504,500 acres. Prineville District BLM manages about 3,975 acres within the subbasin, from the river mouth to the Malheur National Forest boundary (RM 43.1). Major tributaries within the subbasin include Clear, Granite Boulder, Camp, Big, and Long Creeks. Streams on this list generally carry perennial flows, based on U.S.G.S. Quadrangle maps or direct observations. (See Table 3).

Table 3. Streams with BLM ownership, total number of stream segments on BLM parcels, what it flows into, and current steelhead status.

Stream Name	Public Miles	# Of Stream Segments	Tributary to	Steelhead Waters
MF John Day R. (below hiway 395)	1.3	5	NFJDR	Winter Rearing
MF John Day R. (Above hiway 395)	0.8	5	NFJDR	Spawning and Rearing
Mosquito Creek	0.5	1	MFJDR	Spawning and Rearing
Huckleberry Creek	0.4	1	MFJDR	Spawning and Rearing
Slide Creek	1.0	1	MFJDR	Spawning and Rearing
Bum Creek	0.4	1	MFJDR	No
Long Creek	0.3	2	MFJDR	Spawning and Rearing
Jordan Creek	0.6	1	Long Creek	No
Cole Canyon	0.8	3	MFJDR	Spawning and Rearing
Troff Canyon	0.3	1	Cole Canyon	No
Threemile Creek	0.1	1	MFJDR	No

Description of Ratings of Baseline Indicators for the Middle Fork John Day River and tributaries including; Mosquito, Huckleberry, Slide, Bum, Long, Jordan, Cole Canyon, Troff Canyon, and Threemile Creeks.

Water Temperature: Except for the MF John Day, none of these stream segments have been monitored for temperature on BLM lands. The MFJDR (1993-96), Long Creek (1990-93), and Mosquito Creek (1991-92), all exceeded 64 F standard, and listed under CWA 303d.. All other BLM stream segment likely exceed this summer rearing standard. Some may meet 57-60 F standard during spawning season, based on professional judgement. **Not Properly Functioning**

Sediment/Turbidity: There is no sediment data for these streams. From professional judgement and direct observations, this condition would be rated **At Risk**.

Chemical Contamination/Nutrients: The MFJDR (mouth to Crawford Creek) also is listed as a CWA 303d reach for flow modification. Professional judgement would rate this category as **At Risk** due to high water temperatures that would affect dissolved oxygen levels.

Physical Barriers: There are no known manmade barriers to steelhead migration on these streams. **Properly Functioning**

Substrate Embeddedness: No embeddedness measurements have been made, professional judgement from direct observations would rate this condition **At Risk**.

Large Wood: There is no large wood data available for these streams. Professional judgement from direct observations and review of riparian habitat inventories would rate this condition as **At Risk or Not Properly Functioning.**

Pool Frequency: There is no current pool frequency data available for these streams. Professional judgement from direct observations would rate these streams as **Not Properly Functioning**. This is because pool frequency standards are not currently being met.

Pool Quality: Pool quality would be considered **Functioning at Risk** on these streams. This rating based on direct observation of few pools deeper than 1 meter.

Off-Channel Habitat: No information is available to rate these streams. Based on direct observations, condition is rated **Not Properly Functioning**.

Refugia: Based on professional judgement these stream segments are not of sufficient length, size, number and connectivity to maintain viable populations or sub-populations or serve as refugia. These segments are scattered among large portions of private lands, with little connectivity to other contiguous stream segments on National Forest lands. **Not Properly Functioning**

Wetted Width/Max Depth Ratio: There is no current width to depth ratio data available for these streams. Professional judgement would rate them **Not Properly Functioning,** because these stream channel types are not expected to have width/depth ratios less than 12.

Streambank Condition: Based on direct observations and review of riparian habitat inventories, most streams appear to be **At Risk.**

Floodplain Connectivity: From professional judgement and direct observations, this is rated **At Risk.** Historic data showing the extent of wetlands and the frequency of overbank flows to compare to current conditions is unknown.

Changes in Peak Flow/Base Flow: From review of riparian inventories, there is no evidence of peak flow/base flow changes on BLM stream segments. **Properly Functioning**

Drainage Network Increase: Increases of the drainage network are generally limited to road interaction with streams. Based on roads commonly adjacent to streams, this condition is rated **At Risk**

Road Density and Location: Estimated average road densities are 1-2.4 mi/mi^2 with many valley bottom roads. **At Risk or Not Properly Functioning**

Disturbance History: Most BLM forested tracts have never been harvested, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

Riparian Reserves: To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

Baseline Conditions for the Lower John Day River Subbasin #17070204

Introduction

The Lower John Day subbasin encompasses about 2,011,000 acres. Prineville District BLM manages about 242,600 acres within the subbasin, from the river mouth to the confluence with the North Fork at Kimberly (RM 185). Major tributaries within the subbasin include Parrish, Kahler, Bridge, Pine, Butte, Thirty Mile, and Rock Creeks. Table 4 lists perennial, intermittent, and ephemeral drainages in this basin that on public lands.

Table 4. - Stream miles of summer steelhead habitat within the Lower John Day Basin. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

Amine Canyon	3.0	John Day River	Ephemeral	None
Armstrong Canyon	1.0	Thirtymile Creek	Ephemeral	None
Bear Creek	2.07	Bridge Creek	Perennial	Spawning/Rearing
Beef Hollow	1.0	John Day River	Ephemeral	None
Ben Glenn Canyon	1.25	John Day River	Ephemeral	None
Big Gulch	1.0	John Day River	Ephemeral	None
Black Canyon	3.0	Girds Creek	Ephemeral	None
Bologna Creek	0.3	John Day River	Perennial	Spawning/Rearing
Box Canyon	1.0	Thirtymile Creek	Ephemeral	None
Bridge Creek	12.75	John Day River	Perennial	Spawning/Rearing
Bruckert Canyon	0.1	John Day River	Ephemeral	None
Brush Canyon	0.25	Pine Hollow	Ephemeral	None
Buckskin Canyon	0.75	John Day River	Ephemeral	None
Bull Canyon	0.25	Willow Spring Canyon	Ephemeral	None
Button Hollow Creek	0.33	Parrish Creek	Ephemeral	None
Cherry Creek	0.25	John Day River	Intermittent	None
Chimney Springs Canyon	0.25	John Day River	Ephemeral	None
Chisholm Canyon	1.8	John Day River	Ephemeral	None
Clark Canyon	3.0	John Day River	Ephemeral	None
Cold Springs Canyon	0.5	Pine Hollow	Ephemeral	None
Combine Canyon	1.0	John Day River	Ephemeral	None
Condon Canyon	0.25	Thirtymile Creek	Intermittent	None
Corral Canyon	2.0	John Day River	Ephemeral	None
Corral Hollow	1.0	Hay Creek	Ephemeral	None
Cottonwood Canyon West	1	John Day River	Ephemeral	None
Cottonwood Canyon East	1.0	John Day River	Ephemeral	None
Coyote Canyon	3.0	Bridge Creek	Ephemeral	None
Currant Creek	1.5	Muddy Creek	Intermittent	None
Currie Canyon	1.5	Little Ferry Canyon	Intermittent	None
Dead Dog Canyon	1.75	John Day River	Ephemeral	None
Deep Canyon	1.0	John Day River	Ephemeral	None
Deer Horn Canyon	0.75	John Day River	Ephemeral	None
Devils Canyon Lower Trib	0.5	John Day River	Ephemeral	None
Devils Canyon Upper Trib	1.5	John Day River	Ephemeral	None
Dipping Vat Canyon	1	Little Ferry Canyon	Intermittent	None
Domogala Canyon	1.0	Cherry Creek	Ephemeral	None
Dry Creek	1.0	Cherry Creek	Ephemeral	None
Dry Creek	3.0	John Day River	Ephemeral	None
Dugout Canyon	0.5	John Day River	Intermittent/	None
Eagle Canyon	2.0	Hay Bottom Canyon	Ephemeral	None
East Bologna Creek	0.3	Bologna Creek	Perennial	None
East Little Pine Hollow	2.0	Little Pine Hollow	Ephemeral	None

Emigrant Canyon	0.7	John Day River	Ephemeral	None
Esau Canyon	2.5	John Day River	Intermittent	None
Fern Hollow	1.5	John Day River	Ephemeral	None
Ferry Canyon	2.26	John Day River	Intermittent	Spawning/Rearing
Flannery Gulch	0.75	Bear Creek	Intermittent	None
Gable Creek	3.5	Bridge Creek	Perennial	Spawning/Rearing
Girds Creek	2.12	John Day River	Intermittent	Potential Spawning/Rearing
Grass Valley Canyon	2.89	John Day River	Perennial	Spawning/Rearing
Harper Creek	0.1	John Day River	Intermittent	None
Hawley Canyon	0.25	Muddy Creek	Ephemeral	None
Hay Bottom Canyon	3.0	John Day River	Ephemeral	None
Hay Creek	0.25 + 3.5	John Day River	Perennial/Intermittent	Spawning/Rearing
Heidtmann Canyon	0.25	John Day River	Intermittent	None
Horseshoe Creek	0.18	John Day River	Perennial	Spawning/Rearing
Indian Hollow Creek	0.31	Parrish Creek	Perennial	None
Jackknife Canyon	6.99	John Day River	Intermittent	Spawning/Rearing
James Canyon	2.0	John Day River	Intermittent	None
John Day Gulch	3.25	John Day River	Ephemeral	None
John Day River	76.93	Columbia River	River/Perennial	Migratory
Juniper Canyon	0.75	Ferry Canyon	Ephemeral	None
Juniper Canyon Lower	0.5	John Day River	Ephemeral	None
Juniper Canyon Upper	0.25	John Day River	Ephemeral	None
Laurel Hollow Creek	0.33	Balm Hollow Creek	Intermittent	None
Left Hand Canyon	0.31	Parrish Creek	Perennial	None
Little Ferry Canyon	3.16	John Day River	Intermittent	Spawning/Rearing
Little Gulch	1.0	John Day River	Ephemeral	None
Lockwood Canyon	5.0	Pats Cabin Canyon	Ephemeral	None
Lone Juniper Canyon	0.5	Thirtymile Creek	Ephemeral	None
Long Hollow	3	John Day River	Intermittent	None
Masiker Creek	0.25	John Day River	Intermittent	None
Mathas Creek	0.1	John Day River	Intermittent	None
McGilvery Canyon	0.25	John Day River	Ephemeral	None
Meyers Canyon	3.0	Bridge Creek	Intermittent	None
Mud Creek	2.0	Gable Creek	Intermittent	None
Muddy Creek	0.5	John Day River	Perennial	Potential Spawning
Muleshoe Creek	0.25	John Day River	Ephemeral	None
Nelson Creek	1.0	Bridge Creek	Perennial	Potential Spawning
Owen Basin	1.0	John Day River	Ephemeral	None
Pats Cabin Canyon	4.0	Bridge Creek	Ephemeral	None
Pete Enyart Canyon	2.0	John Day River	Intermittent	None
Pine Hollow	4.5	John Day River	Intermittent	Spawning/Rearing
Post Gulch	0.25	Bear Creek	Ephemeral	None
Potlach Canyon	2.0	John Day River	Ephemeral	None
Rattlesnake Canyon	1.5	John Day River	Intermittent	None
Rhodes Canyon	1.6	John Day River	Intermittent	None
Richmond Canyon	.25	Thirtymile Creek	Ephemeral	None
Rock Canyon	0.75	John Day River	Ephemeral	None
Rock Creek	0.56	John Day River	Perennial	Migratory
Roland Canyon	0.25	John Day River	Ephemeral	None
Rosebaum Canyon	0.5	John Day River	Ephemeral	None
Rosebriar Canyon	0.25	Ferry Canyon	Ephemeral	None
Schott Canyon	0.75	Thirtymile Creek	Ephemeral	None
Scott Canyon	0.87	John Day River	Ephemeral	None
Service Creek	0.19	John Day River	Perennial	Spawning/Rearing
Shoofly Creek	0.3	John Day River	Intermittent	None
Sixmile Canyon	1.5	Hay Creek	Intermittent	None
Smith Canyon	2.0	John Day River	Ephemeral	None
Sorefoot Creek	3.41	John Day River	Perennial	None

South Fork	1.0	Pete Enyart Canyon	Ephemeral	None
Tap Horn Canyon	0.75	John Day River	Ephemeral	None
Thirtymile Creek	0.58	John Day River	Perennial	Migratory
Trail Canyon	2.0	John Day River	Ephemeral	None
Tucker Canyon	0.25	Thirtymile Creek	Ephemeral	None
Weddle Creek	2.0	Gable Creek	Ephemeral	None
West Bologna Creek	1.0	Bologna Creek	Perennial	None
White Rock Canyon	1.0	Cherry Creek	Ephemeral	None
Willow Spring Canyon	1.0	John Day River	Intermittent	None
Zigzag Canyon	0.5	John Day River	Ephemeral	None
Cow Canyon	0.5	John Day River	Ephemeral	None
Cason Canyon	1.0	Thirtymile Creek	Ephemeral	None
Rutledge Canyon	0.5	Jackknife Canyon	Ephemeral	None
Long Hollow	1.5	Pine Hollow	Intermittent	Spawning/Rearing

Description of Ratings of Baseline Indicators for perennial streams in the Lower John Day River below Kimberly. These include: Bear Creek (2.07 miles spawning/rearing), Bologna Creek (0.3 miles spawning/rearing), Bridge Creek (12.75 miles spawning/rearing). Currant Creek (1.5 miles), East Bologna Creek (0.3 miles), Gable Creek (3.5 miles spawning/rearing), Hay Creek (0.25 perennial, 3.5 miles intermittent, all with some spawning and rearing), Holmes Creek (0.3 miles potential spawning/rearing), Horseshoe Creek (0.18 miles spawning/rearing), Indian Hollow Creek (0.31 miles), Left Hand Canyon (0.31 miles), Muddy Creek (1.0 mile potential spawning/rearing), Nelson Creek (1.0 mile potential spawning/rearing), Rock Creek (0.56 miles migratory), Service Creek (0.19 miles spawning/rearing), Shaw Canyon (0.06 miles), Sorefoot Creek (3.41 miles), Thirtymile Creek (0.58 miles migratory), and West Bologna Creek (1.0 mile).

Water Temperature: Water temperature typically exceeds state DEQ water quality threshold of 64°. These streams provide a wide variety of habitat from migratory to spawning/rearing. **Not Properly Functioning**

Sediment/Turbidity: Sediment seems to be transported through these systems during high flows. Sediment buildup appears to be occurring in many stream segments associated with hydrophytic plant populations, especially willow species. Dominant substrate is gravel/cobble/ sand. Early spring runoff produces moderate to high turbidity in these streams. **Not Properly Functioning**

Chemical Contamination/Nutrients: The are no known chemical contaminants in these areas. **Properly Functioning**

Physical Barriers: Cherry Creek has a structure near the streams mouth, on private land, which appears to be a base flow barrier to fish movement. No other streams have known barriers. **At Risk**

Substrate: Substrate is dominated be gravel/cobble with fines. Embeddedness is moderately high with fine sediment evident within the stream channel. **At Risk**

Large Wood: Large wood in these perennial streams historically played a larger role in pool formation, stream shade, and streambank stability than currently. Historic land use practices have adversely affected new recruitments, flood events have physically removed mature trees

(cottonwoods, alders, willows, birch, and other species), or segregated overstory trees from water tables as stream reaches experienced downcutting. With improving grazing practices, trees and shrubs are currently increasing along most of these reaches, but it will be years before large wood recruitment to stream channels occurs at a measurable rate. Based on direct observations, current condition is **Not Properly Functioning**

Pool Frequency: Pools frequencies standards are not met in these streams. Many of these stream reaches are improving in condition. As riparian conditions improve, pool frequencies are expected to increase. **Not Properly Functioning**

Pool Quality: Pool condition and quality is increasing in these stream areas. Increased bank stability, as well as large boulder/bedrock features provide for depth and cover in many areas. Condition is on an upward trend. **At Risk**

Off-Channel Habitat: Off channel habitats are being developed as these streams develop and rebuild floodlains. Beaver presence has also led to an increase in these habitats. **At Risk**

Refugia: Refugia are present in these areas with increasing frequency. As stream conditions continue to improve these areas will become more connected and functional. **At Risk**

Width/Depth Ratio: Increase in healthy riparian vegetation has led to a narrowing of the stream channels in most areas and therefore a decrease in the width to depth ratio. **At Risk**

Streambank Condition: Streambanks in many areas show evidence of downcutting. Changed grazing management on many areas of public land in the last 7 years has shown an increase in vegetation along the stream and a subsequent increase in floodplain area as well as sinuosity. Streambanks have improved with increases in riparian vegetation and root structure increase. Conditions are **Not Properly Functioning**

Floodplain Connectivity: Many of these streams have historically had significant down cutting of stream channels. Changes in grazing management have led to increased riparian vegetation, bank stability, and floodplain area. High flows have then led to a widening of stream bottom which has served to reestablish new floodplains in many areas. **At Risk**

Changes in Peak/Base Flows: Improvements in riparian vegetation and bank structure in recent years may be increasing base flows in some streams. This is still speculative, however. **At Risk**

Increases in Drainage Network: Roads have not increased the drainage network within the watershed. There has probably been some increase in sediment due to road placement, but the drainage network itself probably has not increased. **Properly Functioning**

Road Density and Location: Road densities are low, with some valley bottom roads. **At Risk**

Disturbance History: BLM timber harvest of forested parcels within the lower John Day Basin is minimal. **Properly Functioning/Not Applicable**

Riparian Reserves: To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. Riparian areas within these stream areas are increasing in response to grazing management. Connectivity between high quality riparian areas is also increasing. **Not Applicable**

Description of Ratings of Baseline Indicators for intermittent drainages in the Lower John Day River below Kimberly. These include: Cherry Creek (0.25 miles potential spawning/rearing), East Little Pine Hollow (2.0 miles), Ferry Canyon (2.26 miles spawning/rearing). Girds Creek (2.12 miles potential spawning/rearing), Grass Valley Canyon (2.89 miles spawning/rearing), Jackknife Canyon (6.99 miles spawning/rearing), Little Ferry Canyon (3.16 miles spawning/rearing), Pine Hollow (4.5 miles spawning/rearing), Rhodes Canyon (1.6 miles), Long Hollow (1.5 miles spawning/rearing), and Shoofly Creek (0.3 miles potential spawning/rearing).

Generally streams within this category have very similar habitat components in varying amounts. These drainages are all characterized by similar habitat types including: seasonal/intermittent stretches of broad, channel, gravel/cobble/ substrate with little riparian vegetation, interspersed with areas of perennial stream usually associated with bedrock features, gravel/cobble substrate and presence of riparian vegetation. The difference in these types of habitat is typically the presence or absence of perennial reaches and residual pools where juvenile steelhead spend the summer.

Water Temperature: Water temperature typically exceeds state DEQ water quality threshold of 64° but does not exceed lethal limits for juvenile steelhead. This is due in large part to association between residual pools and water table. **Not Properly Functioning**

Sediment/Turbidity: Sediment seems to be transported through these systems during high flows. Sediment buildup does not appear to be occurring. **Properly Functioning**

Chemical Contamination/Nutrients: The are no known chemical contaminants in these areas. **Properly Functioning**

Physical Barriers: The physical barriers associated with these streams include the characteristic intermittent or ephemeral nature of the flow regime near the mouth of these tributaries. The lower section of these streams typically only flow during high spring runoff events, allowing a narrow margin for steelhead adults to move up into the drainage or juvenile steelhead to move downstream out of the basin. **At Risk**

Substrate: Substrate is dominated be gravel/cobble/boulder, and fines are not excessive in the substrate. **Properly Functioning**

Large Wood: Large wood in the Lower John Day River basin, with its narrow canyon walls and marked lack or recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

Pool Frequency: Residual pools in perennial sections of these streams do not meet pool frequency standards. The nature of intermittent streams dictates that most scour pools will dry up, diminishing available rearing habitat. **Not Properly Functioning**
Pool Quality: Residual pools are in good condition, usually deep, and associated with cool ground water sources. **Properly Functioning**

Off-Channel Habitat: There are no residual off channel habitats within these areas, for most of the channel is dry. **Not Applicable**

Refugia: Refugia is limited to existing residual pool habitats within these streams. **Not Properly Functioning**

Width/Depth Ratio: There is a lack of wetted stream channel during rearing periods. Available rearing habitat is dominated by isolated residual pools or short reaches, that often are not linked by surface flows. **Not Applicable**

Streambank Condition: Areas with residual summer habitat are characterized by moister ground conditions and higher presence of hydrophytic plant species. **Properly Functioning**

Floodplain Connectivity: Professional judgement rates this indicator as **At Risk,** based on the lack to stability in these systems.

Changes in Peak/Base Flows: Improvements in riparian vegetation and bank structure in recent years may be increasing duration that these streams flow water into the summer. This is still speculative, however. **At Risk**

Increases in Drainage Network: Roads have not increased the drainage network within the watershed. Most roads created in the area follow drainages already. There has probably been some increase in sediment due to road placement, but the drainage network itself has not increased. **Properly Functioning**

Road Density and Location: Many roads within the basin are along drainage areas; however, there is a fairly low density of road within the area to begin with. **At Risk**

Disturbance History: BLM timber harvest of forested land parcels within the lower John Day Basin is minimal. **Properly Functioning/Not Applicable**

Riparian Reserves: To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. **Not Applicable**

Description of Ratings of Baseline Indicators for the Mainstem Lower John Day River Corridor from Kimberly to the river mouth

Water Temperature: At mouth, summer values exceeded Oregon DEQ standard of 64°F each year between 1986-1995 with a maximum of 83°F. ODFW notes that water temperatures provide a sufficient thermal barrier in the lower river which discourages fish migration until water temperatures drop to suitable ranges typically beginning September to October. Fish therefore use this habitat as migratory only when temperatures coincide with tolerance levels. **Not Applicable or At Risk**

Sediment/Turbidity: The John Day River transports some volume of sediment every year. Consistent sources of sediment occur along the rivers edge including many agricultural fields which lose portions next to the river on a frequent basis. **At Risk**

Chemical Contamination/Nutrients: The are no known chemical contaminants in these areas. **Properly Functioning**

Physical Barriers: There are no physical barriers such as dams or falls within the section of the watershed. **Properly Functioning**

Substrate: There are sources of sediment within the basin; however, sediment buildup within the gravels of the stream channel is not a problem. The dominant substrate is cobble and gravel. There is no spawning or rearing habitat in this reach of the river. **Not Applicable**

Large Wood: Large wood in the Lower John Day River, with its narrow canyon walls and marked lack or recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

Pool Frequency: Pools in river are associated with lateral scour and bends in the river corridor. **Properly Functioning**

Pool Quality: Lateral scour nature of mainstem pools maintains pools in a fairly static condition year to year. **Properly Functioning**

Off-Channel Habitat: This is a minor component for fish habitat within the lower river. Migrating steelhead key to the river thalweg, particularly juveniles. During summer months steelhead do not inhabit this lower mainstem section of the river. **Not Applicable**

Refugia: Migratory travel corridor habitat only **Not Applicable**

Width/Depth Ratio: The Lower John Day River is a system in which water volume fluctuates significantly from season to season. High flows in excess of 10,000 cfs regularly occur in winter to spring runoff times, while summer flows of less than 100 cfs occur in some stretches of the lower river. The bank controlling factors for the lower river are predominantly steep canyon walls, interspersed with broader floodplain valleys. Width to Depth ratios are most likely

consistent with standards given the channel controlling factors evident in the basin. **Properly Functioning**

Streambank Condition: The nature of the lower river is a narrow canyon between steep canyon walls interspersed with broader floodplain/agricultural areas. In many instances banks are composed of steep bedrock. Many other areas a characterized by large cobble/small boulder streambanks that are increasing with regard to willow presence and health. Most of the streambank within the lower basin are stable. However, areas associated with wide valley bottom and fine alluvium bank material show signs of erosion. **At Risk**

Floodplain Connectivity: The canyon topography of much of the lower river maintains a connection between floodplain and river channel. Areas characterized by broader floodplains are inundated only by the river in times of excessive flow. **At Risk**

Changes in Peak/Base Flows: Any changes to peak/base flows in the lower John Day River corridor, are likely the result of cumulative effects of land management practices within the entire drainage area. Gauging station data shows that since flows have been monitored on the Lower John Day River (1906-present), all flows over 25,000 CFS have occurred since 1965. Irrigation use alters base flows, most notably during the months of July-September. **At Risk**

Increases in Drainage Network: Roads near the river corridor are few and likely have not increased the drainage network. **Properly Functioning**

Road Density and Location: Access to the river corridor is very limited via road. **At Risk**

Disturbance History: The lower John Day River corridor is not suitable conifer forest habitat. **Not Applicable**

Riparian Reserves: An assessment of the potential of the various riparian sites has not been made in the lower basin. However, riparian areas in certain areas are recovering as witnessed by increases in hydrophytic vegetation especially willows. **Not Applicable**

Description of Ratings of Baseline Indicators for ephemeral drainages in the Lower John Day River below Kimberly. See Table 4 for canyon, hollow and gulch names.

Water Temperature: Water temperature in these types of systems has not been monitored. Water typically only flows during times of high or extreme runoff usually specific to individual storm events and locations. **Not Applicable**

Sediment/Turbidity: Sediment transport within these ephemeral draws and tributaries on a yearly basis across the basin is low. These areas only move water at extreme precipitation events and usually are highly localized. Sediment transport will occur at these times. Erosion is dependent on ground condition, these areas are typically not moist enough to allow hydrophytic plants to grow. These areas mimic upland areas in terms of management and condition. Many of these drainage flow downstream into migratory or non-presence areas with regard to steelhead habitat. **Properly Functioning**

Chemical Contamination/Nutrients: The are no known chemical contaminants in these areas. **Properly Functioning**

Physical Barriers: There is no fish habitat within these areas therefore physical barriers such as dams or falls within the section of the watershed are **Not Applicable**

Substrate: Drainage bottoms of this type do not support fish habitat, substrate is therefore irrelevant. **Not Applicable**

Large Wood: Large wood in the Lower John Day River basin, with its narrow canyon walls and marked lack or recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

Pool Frequency: There are no residual habitats within these areas. **Not Applicable**

Pool Quality: There are no residual habitats within these areas. **Not Applicable**

Off-Channel Habitat: There are no residual habitats within these areas. **Not Applicable**

Refugia: There are no residual habitats within these areas. **Not Applicable**

Width/Depth Ratio: There are no residual habitats within these areas. **Not Applicable**

Streambank Condition: These areas mimic upland areas in terms of management and condition. **Not Applicable**

Floodplain Connectivity: The canyon topography of much of the lower river drainages maintains a strict connection between floodplain and channel. Since flows occur usually at flood periods in these areas the drainage area is synonymous with the floodplain. **Properly Functioning/Not Applicable**

Changes in Peak/Base Flows: The nature of the lower section of the drainage, topography and seasonal conditions has not changed drastically over time. **Not Applicable**

Increases in Drainage Network: Roads have not increased the drainage network within the watershed. Most roads created in the area follow drainages already. There has probably been some increase in sediment due to road placement, but the drainage network itself has not increased. **Properly Functioning**

Road Density and Location: Many roads within the basin are along drainage areas; however, there is a fairly low density of road within the area to begin with. Access to the river corridor is very limited via road. **At Risk**

Disturbance History: BLM harvest of timbered land parcels within the lower John Day Basin is minimal. **Properly Functioning/Not Applicable**

Riparian Reserves: To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. **Not Applicable**

C. Ongoing, Proposed and Interrelated and Independent Federal Actions

The following is a summary for the Prineville District BLM, Central Oregon Resource Area's activities that may affect steelhead trout or their habitat, and therefore submitted for consultation. These activities and associated decisions are proposed for Calender year 1999.

Proposed Actions:

Timber Management - The BLM proposes to harvest about 993 thousand board feet of timber on 284 acres. This will be accomplished through a commercial thinning timber sale, with leave trees left at 24-30 foot spacing. The sale area lies entirely within the Little Pine Creek drainage, a second order, fish bearing stream near the City of John Day.

Prescribed Burning - The BLM is is proposing to prescribe burn approximately 10,000 acres annually within the John Day Basin for the next 10 years, to recreate the natural process of vegetative succession. Modern fire suppression and recent fire management plans have greatly altered the natural fire regimes, and have changed vegetative species composition, diversity, and ecosystem structure of most of the Northwest. The majority of burns are rangeland sites in late or mid seral stage. The targeted vegetation for burning is mainly overstory big sagebrush and western juniper.

Road Maintenance - Approximately 67 miles of ongoing road maintenance is scheduled for each year in the basin (See Map 1). This includes blading the road surface, cleaning ditches and culverts that have filled, brushing, and resealing an aggregate surface. Some road maintenance is specifically designed to reduce runoff from roads into streams. No sidecasting of road materials towards streams is done.

Pond Construction for Improved Grazing Management - It is proposed to develop an existing spring into a pond. The project is located about 100 feet downslope of the head of an intermittant stream channel. The pond site is about 0.7 miles upstream of Grub Creek, a steelhead occupied stream that has interrupted summer flows.

Range Allotments - There are 136 total allotments with grazing permits within the Upper Mainstem, Middle Fork, North Fork, and Lower Mainstem of the John Day River Basin which may affect steelhead trout. Of this total, 122 allotments are considered "Not Likely to Adversely Affect" and 14 allotments are considered "Likely to Adversely Affect" steelhead trout or its habitat. The primary reason for adverse determinations is because most BLM lands are low elevation areas, and spring grazing strategies (April-June) are the most conducive to maintaining and enhancing riparian conditions. However, this season of use causes potential interactions between grazing livestock and spawning/incubating steelhead trout, creating a potential for take.

A variety of grazing prescriptions are implemented in the Upper Mainstem, North Fork, and Middle Fork subbsins to maintain upland vegetation components. Grazing in pastures/allotments that contain riparian areas is generally limited to short spring treatments (2-8 weeks in April and May). Grazing treatments in large allotments that have many pastures, or higher elevation

forested lands, may have livestock rotation systems. Here, grazing use in pastures with riparian areas typically will occur 2-8 weeks between May 1st and September 1st. Grazing on the upland pastures is managed to maintain and/or restore the upland vegetative component.

Lower John Day Subbasin Range Allotments - Grazing varies from allotment to allotment; however, in most allotments public riparian areas along migratory corridors are grazed during spring, grazing in riparian areas with spawning and rearing is typically conducted in late fall and winter. Grazing in other upland areas without connection or influence on steelhead habitat are grazed at various times throughout the year.

Irrigation withdrawal for Agricultural fields - This program conducts farming and irrigation through agriculture lease or wildlife restoration and enhancement projects on approximately 137.5 acres along Bridge Creek from RM 1 to RM 10. Water to irrigate these fields is diverted from Bridge Creek. Consumptive use of irrigation is regulated under Oregon Water Law and restricts season of use, rate (cfs), and duty (acre-feet) (Oregon Water Resources Department, 1986, John Day River Basin Report). The BLM imposed additional mitigation measures to further reduce potential effects on rearing summer steelhead in Bridge Creek: (1) termination of irrigation if and when Bridge Creek discharge recedes to 10 cfs, and (2) 14 feet minimum buffer/filter strip between field and floodplain (USDI-BLM, 1996, Decision Record - Sutton Mountain Coordinated Resource Management Plan).

Natural Gas Pipeline Right-of-Way - Two right-of-ways for natural gas pipelines are located across the Lower John Day Subbasin. These right-of-ways are currently leased with a renewal date of 2015. The area of concern with regard to steelhead is a six mile section of pipe buried beneath Pine Hollow, an intermittent stream in the lower basin, this particular section is a migratory corridor for steelhead and flows only for a short period in the late winter. Periodic maintenance of this pipeline is conducted in the summer months, when surface flow is minimal or non-existent. Maintenance activities, which includes heavy equipment to keep the pipeline covered with cobble and boulder materials, are conducted with coordination with BLM, ODFW, and Oregon Division of State Lands. This lower section of Pine Hollow is a broad cobble/large gravel channel characterized by a lack of vegetation. Maintenance activities disturb the stream bed; however, these activities are not deemed to be prohibiting stream recovery.

Monitoring of Projects in the John Day River Basin

Monitoring of projects is dependant on the type of action and the effect on other resources. Monitoring of actions that are NLAA or greater will have specific monitoring strategies. For example, grazing actions are monitored under direction provided in the PACFISH/INFISH grazing module Biological Opinion.

D. Analysis of Effects

Timber Management (*South Little Canyon Timber Sale*)

The BLM proposes to commercially thin about 993 thousand board feet of timber on 284 acres, and pre-commercially thin about 150 acres within the harvest units, in the South Little Canyon Timber Sale. Trees larger than 11" diameter at breast height in harvest units, would be thinned to 24-30 feet leave tree spacing, and pre-commercial sized trees would be thinned to 12' X 12' spacing.

To implement the proposed action, the main haul route road would be improved with blading and crushed rock over 3 road miles. New construction of temporary road would total 500 feet, existing road extensions (new construction) would total 400 feet, and 1000 feet of existing roads would be improved for logging use (See Map A).

The timber harvest area lies entirely within the Little Pine Creek drainage, a second order stream. Little Pine Creek is confirmed to support habitat for Westslope cutthroat trout. It is suspected, but not known to contain spawning and rearing habitat for steelhead trout through this reach of the stream. The headwaters of Little Pine Creek flow out of the Strawberry Mountain Wilderness Area, which abuts the BLM managed lands in this drainage.

The objectives of this harvest plan are:

- Commercial thin the understory and overstory ponderosa pine, Douglas fir and white fir trees to improve tree vigor and resistance to future insect damage
- Pre-commercial thin the sale area to establish healthy spacing and stocking levels in the understory
- Remove the insect and disease infected trees of all species
- Enhance forest species diversity in the stand and at the landscape level
- Restrict bark beetle movement throughout the stand

All “Best Management Practices” as listed in the John Day RMP, Record of Decision (Appendix A), will be utilized. Some additional resource protection measures are listed:

- Implement all applicable Riparian Conservation Area no cut buffer areas, as covered in PACFISH, along stream channels
- Full suspension of logs above ground required through RCA buffers
- Tractor yarding on slopes less than 35% slope, and cable yarding and slopes greater than 35%, and more than 10 acres in size

- Improve condition of the Canyon Mountain Trail Road (main haul route) to an all weather road, improving drainage and decreasing surface erosion

- Close all side roads in the sale area that are not deemed necessary for future resource management

- Rip, waterbar and seed all temporary roads, landings, and major skid trails

- Woody debris falling into stream channels from cable whipping will be left in place to minimize disturbance within RCA's

Rational for Checklist Ratings of Effects for Population and Environmental Indicators (See Table 1) for <u>The South Little Canyon Timber Sale</u>

Water Temperature: Water temperatures would not be affected by this action. All fish bearing streams have been excluded from the harvest area with 300 feet (or more) no cut buffer on each side of the streambank. One non fish-bearing stream lies within a harvest unit. It will be buffered from activity with a 150 feet no cut corridor on each side of it. One intermittent stream lies within a harvest unit, and will be buffered with a 50 feet no cut corridor on each side.

Sediment/Turbidity: Minor impacts to sediment levels in perennial streams is expected. Increased truck traffic on the road near Little Pine Creek may increase sediment movement off that road. Most mobilized sediment will be captured by the well vegetated area between the road and Little Pine Creek, however. Stream buffers described under Water Temperature will minimize the amount of sediment potentially mobilized and delivered to stream channels, as a result of the actual timber cutting activities. Proposed road construction is minor (400-500 feet) and is situated outside of any Riparian Conservation Areas (RCA's).

Chemical Contamination/Nutrients: This timber harvest proposal has a low likelihood of causing any chemical contamination to perennial streams.

Physical Barriers: This timber harvest activity will not cause migration barriers.

Substrate Embeddedness: Potentially a small amount of fine sediment could enter Little Pine Creek due to increased truck traffic on the haul route. This is expected to minimal because the main haul route road is only close (within 300 feet) to Little Pine Creek for about 0.3 miles. Dense riparian vegetation will also minimize any sediment delivery to the stream which could increase substrate embeddedness.
Large Wood: This timber harvest will not have any timber removal within PACFISH RCA's. There will be no effect to future or current levels of instream large wood.

Pool Frequency: No adverse effects to pool frequencies are expected because no activities are proposed within RCA's.

Pool Quality: No adverse effects to pool quality are expected because no activities are proposed within RCA's.

Off-Channel Habitat: No adverse effects to off-channel habitats are expected because no activities are proposed within RCA's

Refugia: No adverse effects to riparian reserves are expected because no activities are proposed within RCA's

Wetted Width/Max Depth Ratio: No adverse effects to width to depth ratios are expected because no activities are proposed within RCA's

Streambank Condition: No adverse effects to streambank conditions are expected because no activities are proposed within RCA's.

Floodplain Connectivity:. No adverse effects to floodplain connectivity are expected because no activities are proposed within RCA's. Wetland areas and riparian vegetation will be maintained.

Changes in Peak/Base Flow:. Harvested areas are expected to contain wetter soils after harvest during periods of evapotranspiration. This can lead to higher groundwater levels, and potentially, higher late-summer streamflows. This desirable effect lasts 3-5 years (in clearcut areas) until new root systems occupy the soil (Chanberlain, et al., 1991). Because this harvest activity includes only commercial thinning (24-30 feet leave tree spacing), and pre-commercial thinning (12 X 12 feet spacing) actions, changes in peak/base flows are expected to be minor.

Drainage Network Increase: Minor changes are expected to the drainage network, and will be temporary. New road construction for timber harvest includes about 900 feet, of which 500 feet will be temporary road. No significant increase in drainage network is expected in this matrix analysis area.

Road Density and Location: Road densities will increase slightly within this matrix analysis area, but will remain in the 2-3 miles per square mile range. An increase by 900 feet of new roads, of which 500 feet is temporary road, is very unlikely affect drainage patterns adversely. There are no proposed valley bottom roads. Temporary roads will be ripped, water barred, and seeded after harvest activities are finished.

Disturbance History: Disturbance history (% ECA) will not be effected by this action, because no clearcutting is prescribed in the harvest units.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, this timber harvest activity will have no effect on riparian vegetation communities, for reasons described under Water Temperature.

Table 1. Showing the checklist for documenting environmental base line and effects of the **South Little Canyon Timber Sale**

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature	X				X	
Sediment		X			X	
Chem. Contam./Nut.	X				X	
Habitat Access: Physical Barriers	X				X	
Habitat Elements: Substrate		X			X	
Large Woody Debris	X				X	
Pool Frequency			X		X	
Pool Quality		X			X	
Off-Channel Habitat	N/A				X	
Refugia		X			X	
Channel Cond. & Dyn: Width/Depth Ratio	X				X	
Streambank Cond.	X				X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows		X			X	
Drainage Network Increase			X		X	
Watershed Conditions: Road Dens. & Loc.		X			X	
Disturbance History	X				X	
Riparian Reserves	N/A			N/A		

Answers to the Dichotomous Key For Making ESA Determination of Effects for the South Little Canyon Timber Sale;

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, prescribed stream channel buffers, and implementation of "Best Management Practices" will maintain all indicators

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is a negligible (extremely low) probability of take of proposed/listed anadromous salmonids or destruction/adverse modification of habitat. Implementing stream buffers under PACFISH guidelines should adequately protect water quality, channel stability, riparian vegetation communities and watershed conditions. **Not likely to adversely affect**

Prescribed Burning

The BLM is proposing to prescribe burn about 10,000 acres annually within the John Day Basin for the next 10 years, to recreate the natural process of vegetative succession. See Table D1 for proposed burn areas in 1999. Long term goals of this program are to:

- Restore the health and diversity of vegetation
- Control the spread of western juniper
- Reduce hazard fuels
- Improve decadent aspen communities
- Improve long-term hydrological regimes (water quality, flow, timing)
- Increase forage for wildlife and livestock

Prescribed burning is the planned application of fire to wildland fuels in their natural or modified state, under specific conditions of fuel, weather, and other variables to allow fire to achieve site specific resource management objectives. Prescribed burning can serve to improve soil conditions by reducing the amount of bare ground and increasing grass cover and organic matter. Gregory et al. (1991) states that under natural conditions, riparian plant communities have a high degree of structural and compositional diversity, reflecting the history of past disturbances such as floods, fire, wind, grazing, plant disease, and insect outbreaks.

Without periodic fire, species such as western juniper and sagebrush, increase in abundance under recent historical fire suppression methods. Research shows that expansion and increasing abundance of western juniper results in watershed degradation, which seriously affects productivity, water quantity and quality (Bedell et al, 1993). Sites occupied by juniper can release up to 1,600 lbs. per acre of sediment during rain storms or from the overland flow of melting snow. On semi-arid sites, water interception and use by western juniper causes a decline in forbs, grasses, and shrubs in the spaces between juniper canopies.
This increases bare mineral soil in juniper-dominated watersheds (Bedell et al, 1993).

All burn units proposed for treatment would be evaluated for special resource needs (including Threatened or Endangered species habitat) and mitigating measures would be covered in the burn plan to ensure project objectives can be met, or the unit will be dropped from consideration. Some mitigation measures that will be considered in the development of the burn plans are:

- Burn primarily in late summer or fall when most vegetation is dormant. Winter and spring burning may be done if needed to achieve objectives.

- Mimic the natural historical fire regime. Burn in a mosaic pattern with irregular boundaries to create diversity and maximum edge effect to ensure adequate wildlife cover.

- Use existing roads, trails or other natural fuel breaks to contain the prescribed fire.

- Avoid allowing prescribed fire to enter the riparian zone of influence along perennial or fish bearing streams

Treatments would primarily occur on sagebrush-juniper plant associations, but may include ponderosa pine, aspen, and riparian sites. Prescription burn temperatures are not expected to exceed 500 degrees F. Following treatment, units will be monitored to determine the project's effectiveness, fire effects, and recovery rates using photo-point references, plots, and individual observations. Firing methods will be specific to each proposed unit and could include combinations of hand-held drip torches, heli-torches, ping-pong balls, and fuzees. In the event that a unit is selected without existing firelines present, fireline would be constructed from a combination of roads, handline, and blackline in a efficient manner that protects natural resources. All roads/line constructed would be rehabilitated using waterbars, and native seed mixes following completion of the burn.

Table D1: Proposed Prescribed Burn Units for Fiscal Year 1999 in the John Day Basin

Name	**Location**	**Acres to Burn**
South Carroll Rim	Sutton Mountain/Mitchell	2-3,000 acres
Gable Creek	Mitchell	1,500 acres
McNulty Burn	T. 13 S. R. 26 E. Sec. 21	75 acres
Morgan Creek Allotment Burn	T. 17 S., R. 27 E., Secs. 1-3, 10-15, 23-24.	2400 acres
Whisenhunt Burn	T. 12 S., R. 27 E., Sec. 30	55 acres
Hole-in-Ground Burn	T. 18 S., R. 27 E., Sec. 15, 2, 10	510 acres
Corral Creek Burn	T. 18 S. R. 28 E. Sec. 15	134 acres
Creek Burn	T. 12 S., R. 26 E., Sec 32; T. 13 S., R. 26 E., Sec. 5	291 acres
Total Acres to burn		7,965 acres

Although proposed burn units are located across the John Day Basin, potential effects to steelhead habitat are essentially the same for all proposed burn areas. Following the mitigation measures described above will satisfy a broad application of potential effects to steelhead trout. For this reason, only one Rational for Checklist Ratings of Effects narrative will be presented, even though several baseline matrices are affected by this activity.

Rational for Checklist Ratings of Effects for Population and Environmental Indicators for Prescribed Burning in the John Day Basin

Water Temperature: Water temperatures would not be affected by this action. The riparian zone of influence adjacent to all perennial streams (fish-bearing or non fish-bearing) will be avoided from burning activities, by all reasonable methods.

Sediment/Turbidity: Minor impacts to sediment levels in perennial streams is expected. This would be a temporary condition until burned areas regrow. Intact vegetation in riparian areas will effectively filter most sediments mobilized from upland burned areas. The important aspects of post-fire hydrology are typically water retention and water quality. High intensity burns associated with wildfires can result in hydrophobic soil conditions which may decrease infiltration and absorption rates and limit water retention capacities. The effects of non-wettable soil layers are primarily the same as any dense or hard pan soil layer that restricts water movement through the soil, and often result in an increase in overland flows and surface erosion. Prescribed burns are primarily lower intensity and are designed to minimize hydrophocity.

Chemical Contamination/Nutrients: This indicator will not be affected significantly, since prescribed burns minimize the volatization of nutrients like nitrogen because of lower burn intensities.

Physical Barriers: This activity will not cause migration barriers.

Substrate Embeddedness: This indicator is not expected to be adversely affected for the same reasons discussed under Sediment/Turbidity. Riparian vegetation will also minimize any sediment delivery to the stream which could increase substrate embeddedness.

Large Wood: Large wood would not be affected by this action. The riparian zone of influence adjacent to all perennial streams (fish-bearing or non fish-bearing) will be avoided from burning activities. Effects to future or current levels of instream large wood would be minimal.

Pool Frequency: No adverse effects to pool frequencies are expected because activities within RCA's will be avoided.

Pool Quality: No adverse effects to pool quality are expected because activities within RCA's will be avoided.

Off-Channel Habitat: No adverse effects to off-channel habitats are expected because activities within RCA's will be avoided.

Refugia: No adverse effects to riparian reserves are expected because activities within RCA's will be avoided.

Wetted Width/Max Depth Ratio: No adverse effects to width to depth ratios are expected because activities within RCA's will be avoided.

Streambank Condition: No adverse effects to streambank conditions are expected because activities within RCA's will be avoided.

Floodplain Connectivity: No adverse effects to floodplain connectivity are expected because activities within RCA's will be avoided. Wetland areas and riparian vegetation will be maintained.

Changes in Peak/Base Flow: No adverse effects to Peak/Base flows are expected for rationale described under Sediment/Turbidity.

Drainage Network Increase: Minor changes are expected to the drainage network, until burned areas experience regrowth of vegetation. Subsequent regrowth is expected to be denser in the future, minimizing drainage networks in the future.

Road Density and Location: Road densities could increase slightly on a temporary basis, until fireline roads are revegetated from seeding, following the burn.

Disturbance History: Disturbance history (% ECA) will not be effected by this action, because no timber harvest is prescribed in this activity.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, this activity will have no effect on riparian vegetation communities, for reasons described under Water Temperature.

Answers to the Dichotomous Key For Making ESA Determination of Effects for Prescribed Burning in the John Day Basin;

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the proposed burn activities are outside of the riparian zone of influence. The nature of low intensity, prescribed burn strategies minimize off site soil erosion and sediment delivery to stream channels.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is a negligible (extremely low) probability of take of proposed/listed anadromous salmonids or destruction/adverse modification of habitat. Implementing mitigation measures discussed above should adequately protect water quality, channel stability, riparian vegetation

communities and watershed conditions. **Not likely to adversely affect**

Road Maintenance on the South Fork John Day River (23.1 miles), Deer Creek Road (3.0 miles), and the Indian Creek Road (4.4 miles); Replacement of culvert at mouth of Smoky Creek to restore anadromous salmonid fish access. See Map #1

The BLM periodically maintains these roads (blading and cleaning ditches/culverts), or contracts the work to the Forest Service. The SF John Day road is surfaced with aggregate rock, average gradient is low, is well drained, and exhibits very little surface erosion. Road shoulders are well vegetated and generally there is a dense vegetation buffer between the road and the river. The Indian and Deer Creek roads are native surfaced and have average gradients of about 5.5 and 5.8 percent. Road shoulders generally are well vegetated, with a good vegetation buffer between the road and the streams. The Deer Creek road does encroach the riparian zone in areas.

The Smoky Creek culvert under the SFJDR road will be replaced and improved to restore steelhead trout access to 3.0 miles of spawning and/or rearing habitat. The undersized culvert will be increased in size to accommodate a 100 year peak flow event, thus decreasing the potential for culvert failure and major sediment inputs into the SFJDR.

Road maintenance of existing roads is crucial to prevent large amounts of sediment from entering streams. Filled ditches and side drainage culverts can plug up, causing over road bed flows during storm events. This can deliver a much higher than normal pulse of sediment when road materials are also washed into the stream.

Rational for Checklist Ratings of Effects for population and Environmental Indicators (See Table 2) for <u>Road Maintenance on the South Fork John Day River, Deer Creek, and Indian Creek and Smoky Creek culvert upgrade.</u>

Water Temperature: Maintenance of these roads is preventing the establishment of riparian vegetation in isolated areas. This occurs where the roads are adjacent to streams. This is causing a minor adverse effect to summer water temperatures.

Sediment/Turbidity: The use and maintenance of soil/gravel roads causes chronic sources of fine sediment to be potentially mobilized and delivered to stream channels. Vegetation along these road shoulders is instrumental in catching and stabilizing most sediment runoff of the road surfaces. Culvert installation may cause short term increases in turbidity and sediment delivery to the SFJDR.

Chemical Contamination/Turbidity: Road maintenance should not affect water chemistry.

Physical Barriers: Road maintenance will not cause migration barriers, and replacing the Smoky Creek culvert will eliminate a man-made barrier to steelhead access.

Substrate Embeddedness: Potentially a small amount of fine sediment could enter the system due to road maintenance.

Large Wood: Maintenance of these roads does prevent woody vegetation from establishing in isolated areas. These areas are isolated, and should not be significant enough to degrade steelhead habitat.

Pool Frequency: Road maintenance will not change pool frequency or flow regimes significantly enough to alter pool formation.

Pool Quality: Sediment input will not increase due to road maintenance that will affect the quality or depth of pools.

Off-Channel Habitat: There should be no effects to off channel habitat due to road maintenance.

Refugia: Road maintenance will not affect spawning, and migratory habitat for steelhead and chinook. There is a minimal likelihood of affecting rearing habitat due to the loss of riparian vegetation where these roads are adjacent to the streams.

Wetted Width/Max Depth Ratio: Road maintenance is not expected to effect the wetted width/max depth ratio.

Streambank Condition: No significant bank damage is anticipated to occur due to the road maintenance. This should not have a significant affect to steelhead habitat.

Floodplain Connectivity: Road maintenance will not significantly affect floodplain function and connection to the stream during flood events beyond the impact of the road physically occupying isolated segments of active floodplains. Wetland areas and riparian vegetation will be maintained.

Changes in Peak/Base Flow: Road maintenance will not change the flow regime.

Drainage Network Increase: Road maintenance will not increase the drainage network.

Road Density and Location: Road densities will not change with road maintenance.

Disturbance History: Disturbance history will not be affected by road maintenance.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, road maintenance should not significantly effect the riparian areas.

Table 2. Showing the checklist for documenting environmental base line and effects of **road maintenance and Smoky Creek culvert upgrade** on relevant indicators for the **South Fork John Day River, Deer Creek, and Indian Creek**.

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature		X			X	
Sediment			X		X	
Chem. Contam./Nut.		X			X	
Habitat Access: Physical Barriers			X	X	X	
Habitat Elements: Substrate			X		X	
Large Woody Debris			X		X	
Pool Frequency		X			X	
Pool Quality		X			X	
Off-Channel Habitat		X			X	
Refugia		X			X	
Channel Cond. & Dyn: Width/Depth Ratio		X			X	
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows		X			X	
Drainage Network Increase		X			X	
Watershed Conditions: Road Dens. & Loc.		X	X		X	
Disturbance History	X			N/A		
Riparian Reserves	N/A			N/A		

Answers to the Dichotomous Key For Making ESA Determination of Effects for Road Maintenance on the South Fork John Day River, Deer Creek, Indian Creek.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, road maintenance will not prevent the attainment of relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is more than a negligible probability of destruction/adverse modification of habitat due to the fact that the South Fork John Day River, Deer Creek, and Indian Creek roads are directly adjacent to those streams in isolated locations within their 30.5 total miles of road. This prevents the establishment of riparian vegetation that steelhead fry utilize for cover. **Likely to adversely affect**

Road Maintenance on the Squaw Creek Road (6.5 miles), and the Holmes Creek/Franks Creek Road (30.1 miles). See Map #1

BLM performs periodic maintenance these roads, including blading and cleaning out of ditches/culverts. Both roads are native surface (graded and drained). Road shoulders have varying degrees of vegetative cover. The Holmes-Franks Creek Road has numerous areas where the road closely encroaches the riparian area and the floodplain, where the streams flow through a narrow canyon. The Squaw Creek Road appears to have a good vegetative buffer between the stream and the road.

Road maintenance of existing roads is crucial to prevent large amounts of sediment from entering streams. Filled ditches and side drainage culverts can plug up, causing over road bed flows during storm events. This can deliver a much higher than normal pulse of sediment when road materials are also washed into the stream.

Rational for Checklist Ratings of Effects for population and Environmental Indicators (See Table 3) for Road Maintenance on the Squaw, Holmes, and Franks Creeks Roads.

Water Temperature: Maintenance of these roads is preventing the establishment of riparian vegetation in numerous areas. This occurs where the roads are adjacent to streams. This is causing an adverse effect (unknown amount) to summer water temperatures.

Sediment/Turbidity: The use and maintenance of soil/gravel roads causes chronic sources of fine sediment to be potentially mobilized and delivered to stream channels. Vegetation along these road shoulders is instrumental in catching and stabilizing sediment runoff of the road surfaces. Where little vegetation or space exists between the road and the stream, this impact is more significant.

Chemical Contamination/Turbidity: Road maintenance should not affect water chemistry.

Physical Barriers: Road maintenance will not cause migration barriers.

Substrate Embeddedness: Potentially, additional sediments loosened, mobilized, and delivered to the streams could increase interstitial substrate fines, due to road maintenance.

Large Wood: Maintenance of these roads does prevent woody vegetation from establishing in areas where roads are encroached into the riparian zone. These areas generally occur in narrow area where insufficient room was available for road placement outside of the floodplain area.

Pool Frequency: Road maintenance will not change pool frequency or flow regimes significantly enough to alter pool formation.

Pool Quality: Chronic sediment input could degrade pool habitat quality by filling them partially with mud and fines.

Off-Channel Habitat: There should be no effects to off channel habitat due to road maintenance.

Refugia: None of the streams in this matrix are suitable refugia habitat. Road maintenance will not is not likely to further degrade their suitability beyond current conditions.

Wetted Width/Max Depth Ratio: Road maintenance is not expected to effect the wetted width/max depth ratio.

Streambank Condition: No significant bank damage is anticipated to occur due to the road maintenance. This component should not have a significant affect to steelhead habitat.

Floodplain Connectivity: Road maintenance will not significantly affect floodplain function and connection to the stream during flood events beyond the impact of the road physically occupying segments of active floodplains. Wetland areas and riparian vegetation will be maintained.

Changes in Peak/Base Flow: Road maintenance will not change the flow regime.

Drainage Network Increase: Road maintenance will not increase the drainage network.

Road Density and Location: Road densities will not change with road maintenance.

Disturbance History: Disturbance history will not be affected by road maintenance.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, road maintenance should not significantly effect the riparian areas.

Table3. Showing the checklist for documenting environmental base line and effects of **road maintenance** on relevant indicators for the **Squaw, Holmes, and Franks Creeks Roads.**

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature			X		X	
Sediment		X			X	
Chem. Contam./Nut.	X	X			X	
Habitat Access: Physical Barriers	X				X	
Habitat Elements: Substrate		X	X		X	
Large Woody Debris			X		X	
Pool Frequency			X		X	
Pool Quality		X	X		X	
Off-Channel Habitat		X			X	
Refugia			X		X	
Channel Cond. & Dyn: Width/Depth Ratio			X		X	
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows		X			X	
Drainage Network Increase		X			X	
Watershed Conditions: Road Dens. & Loc.		X			X	
Disturbance History	X			N/A		
Riparian Reserves	N/A			N/A		

Answers to the Dichotomous Key For Making ESA Determination of Effects for Road Maintenance on the Squaw, Holmes, and Franks Creeks Roads.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

Yes, road maintenance will hinder the attainment of properly functioning water temperatures because shade producing vegetation will not be allowed to establish, in certain constricted areas, for the life of the road.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is more than a negligible probability of destruction/adverse modification of habitat due to the fact that the Squaw Creek, Holmes Creek, and Franks Creeks roads are directly adjacent to those streams in some locations within their 36.6 total miles of road. This prevents the establishment of riparian vegetation that steelhead fry utilize. It should be noted that historical and present steelhead utilization/production in Franks and Holmes Creek is unknown. Their production potential is presumed to be low, since both streams are minor, and have segments of interrupted or subsurface flow each year. **Likely to adversely affect**

Pond Construction for Improved Grazing Management

It is proposed to develop an existing spring into a pond. The project is located about 100 feet downslope of the head of an intermittent stream channel. The pond site is about 0.7 miles upstream of Grub Creek, a steelhead occupied stream that has interrupted summer flows.

A dam will be constructed with a caterpillar tractor to push up soils 4-5 feet high. This will capture the spring water all year, and seasonal snowmelt runoff. The pond will cover an area of 50' X 50', and will be about 4-5 feet deep near the dam. The face to the dam will be about 40 feet long and will flatten out in height to the overflow area. Overflow waters will run over rocky ground about 80 feet downstream before re-entering the existing intermittent channel.

Rational for Checklist Ratings of Effects for Population and Environmental Indicators (Table 4) for <u>construction of an upland pond</u>

Water Temperature: Project will not effect any perennial streams, or riparian vegetation..

Sediment/Turbidity: It is possible, but unlikely that sediment from the site could reach Grub Creek 0.7 miles downstream when water flows over the spillway area, and overland to the channel. The area landowner said he has never seen surface water from this intermittent channel flow into Grub Creek before. It is also unlikely that the dam could breach from high runoff conditions. This is because the site is located nearly at the very headwaters of this drainage area, lessening the potential for high water runoff to occur.

Chemical Contamination/Turbidity: This project will not affect this indicator for the rationale discussed under Water Temperature.

Physical Barriers: This project will not cause migration barriers.

Substrate Embeddedness: It is possible but very unlikely that substrate embeddedness could be affected by this project for the same rationale discussed under Sediment/Turbidity.

Large Wood: This project will not affect this indicator.

Pool Frequency: This project will not affect this indicator..

Pool Quality:. This project will not affect this indicator.

Off-Channel Habitat: This project will not affect this indicator.

Refugia: This project will not affect this indicator.

Wetted Width/Max Depth Ratio: This project will not affect this indicator.
Streambank Condition: This project will not affect this indicator.

Floodplain Connectivity: This project will not affect this indicator.

Changes in Peak/Base Flow: This project will not affect this indicator.

Drainage Network Increase: This project will not affect this indicator.

Road Density and Location: This project will not affect this indicator.

Disturbance History: This project will not affect this indicator.

Riparian Reserves: This project will not affect this indicator.

Table 4. Showing the checklist for documenting environmental base line and effects of the **Construction of an upland pond.**

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature	X				X	
Sediment	X	X			X	
Chem. Contam./Nut.	X				X	
Habitat Access: Physical Barriers		X			X	
Habitat Elements: Substrate		X			X	
Large Woody Debris	X				X	
Pool Frequency			X		X	
Pool Quality	X	X			X	
Off-Channel Habitat	N/A				X	
Refugia	X	X			X	
Channel Cond. & Dyn: Width/Depth Ratio		X			X	
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows			X		X	
Drainage Network Increase			X		X	
Watershed Conditions: Road Dens. & Loc.		X			X	
Disturbance History	X				X	
Riparian Reserves	N/A			N/A		

Answers to the Dichotomous Key For Making ESA Determination of Effects for the Construction of an Upland Pond.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No,

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is less than a negligible probability of take of proposed/listed anadromous salmonids. This is because the proposed pond site is located near the very headwaters of and intermittent drainage, so potential for high water runoff into the dam, threatening its integrity of the small dam, is very low. **Not Likely to Adversely Affect**

Range Allotments

There are 136 grazing allotments that will be analyzed because of there potential effects on steelhead trout. Since 1993, the Central Oregon Resource Area has been in the process of reviewing grazing allotments that contain anadromous fish habitat, writing Allotment Evaluations, and implementing adjusted grazing strategies (when necessary), rangeland improvements, and fences to promote recovery of riparian and fish habitat. At the time of the steelhead listing, not all grazing allotments had been evaluated yet.

About 25 grazing allotments will have interim grazing strategies prescribed on segregated BLM riparian segments in 1999. The interim grazing treatments are recommended to protect fishery habitat and facilitate riparian recovery on public riparian areas that previously had minimal BLM influence on grazing management (timing of grazing, or length of use). Typically the interim grazing prescriptions are spring use (1-2 months between 4/1-5/31) each year on lowland, non forested habitats, or 1-2 months of use between 5/1-9/1 each year on upland, forested habitats.

Long term grazing strategies need to be developed that include all private and public lands in each allotment (where practical, and upon coordination and agreement with grazing permit holders). BLM often is the minority land holder within pasture or allotment boundaries. Specific Grazing Allotment descriptions relevant to this biological assessment can be found in Appendix B. The following is the introduction and objectives used for the allotment evaluation process;

I. **Background:**

Following the listing of two anadromous Columbia River fish species (Snake River sockeye salmon, 1991 and Snake River chinook salmon, 1992) under the Endangered Species Act, the Northwest Power Planning Council (Council) amended the Columbia River Basin Fish and Wildlife Program (Program). A Comprehensive strategy for improving Columbia River salmon at every stage of their life cycle was needed. The revision of the Program was the result of over 20 meetings held by the Council with all affected interests. These meetings were sometimes referred to as "The Salmon Summit". The Program was amended and specific elements were published in 1992 as Volumes I and II, "Strategy for Salmon", by the Council. As a result, the Bureau was asked and agreed to review all livestock management plans for public lands that provide habitat for Columbia River anadromous fish. Wherever necessary each plan would be amended, updated and changed to meet the Council's habitat objectives, enhance riparian objectives and comply with State water quality standards.

The following goals and objectives are the guidelines used in evaluation of grazing allotments. Because of the low percentage of public land in the JDR basin (7 percent), the ability to fulfill many of these goals will depend on private landowners affecting management changes on their lands. A comprehensive description of stated objectives may be found in their respective documents.

II. **Land Use Goals and Objectives:**

A. **Basin Wide Goals (described by Interdisciplinary Team):**

1) Meet State Water Quality Standards

2) Rehabilitate Watersheds for Native Flora and Fauna

3) Accommodate the Needs of Affected Interests

B. **Northwest Power Planing Council <u>Strategy for Salmon</u> Objectives:**

1) Limit the percentage of fine sediment (less than 6.4 millimeters in size) in steelhead and salmon redds to no more than 20% just prior to fry emergence relative to a control area.

2)Insure that there is no long term increase in sediment loading from management actions.

3) During spawning, water temperatures should range between 39 and 49 degrees Fahrenheit(^{o}F).

4) During rearing, water temperatures should range between 45^{o}F and 58^{o}F.

5) Concentrations of dissolved oxygen shall not be less than 75% of saturation during the seasonal low level or less than 95% of saturation in spawning areas during spawning and fry development.

6) Allow no more than a 10% cumulative increase in natural stream turbidity as measured relative to a control point upstream.

7) pH of the water shall range between 6.5 and 8.5.

8) Concentrations of total dissolved solids shall not exceed 500 milligrams per liter relative to a control point upstream.

9) Limit fecal coliform to no more than 200 coliform per 100 millimeters of sample relative to a control point upstream.
10) Retain existing shade and increase shade of riparian vegetation, re-vegetate riparian areas.

C. **State Water Quality Standards:**

1) Dissolved Oxygen - concentrations shall not be less than 75% of saturation during the seasonal low level or less than 95% of saturation in spawning areas during spawning and fry development.

2) Temperature - no measurable increases, relative to an upstream control point when stream temperatures are 68°F or greater; or no more than a 2°F increase when stream temperatures are 66°F or less.

3) Turbidity - no more than a 10% cumulative increase in relative to a control point upstream.

4) pH - range between 6.5 and 8.5.

D_1. **Two Rivers Resource Management Plan (1986) Goals and Objectives:**

1) Maintain current livestock grazing levels and meet riparian and upland vegetation and management objectives.

2) Manage riparian areas along the John Day River and its major tributaries to full potential, with a minimum of 60% of the vegetative potential to be achieved within 20 years.

3) Provide forage to meet management objective numbers of ODFW for deer and elk. Manage upland vegetation to achieve maximum wildlife habitat diversity. Manage all streams with fisheries or fisheries potential to achieve a good to excellent aquatic habitat condition.

4) Designate areas with identified outstanding natural or cultural values as areas of critical environmental concern. Maintain or improve other unique wildlife ecological values.

D_2: **John Day Resource Management Plan Record of Decision (1985) Goals and Objectives pertinent to grazing management:**

1) Improve and maintain vegetative condition to benefit livestock and wildlife. Coordinate livestock use in riparian zones in order to protect water quality and enhance anadromous and other sport fisheries.

2) Enhance water quality and manage aquatic habitat with particular attention to those watersheds with major downstream uses including native anadromous species, other sports fisheries, and agriculture.

Habitat Management Techniques identified in the John Day RMP to help meet riparian habitat objectives when developing livestock grazing systems include:

1) Designing management activities in riparian zones that will maintain or, where possible, improve riparian habitat condition

2) Either eliminate hot season grazing (ie, grazing during the hottest part of summer), or schedule hot season grazing on a rotational basis.

Rational for Checklist Ratings of Effects for Population and Environmental Indicators (See Table 5) for Range Allotments on the following streams; Dads, Dixie, Standard, W. Fork Standard, Comer, Bull Run, Bear, Indian, W. Fork Little Indian, Pine, Bear Gulch, Grub, Little Pine, Canyon, Sheep Gulch, Hanscombe tributary, Beech, Capsuttle, McClellan, Big Canyon, West Birch, West Birch tributary, and East Birch Creeks.

The following allotments are included in this rating; 4016 Dixie, 4045 Bear Gulch, 4099 Indian, 4174 Reynolds Creek, 4047 Little Indian, 4141 Pine Creek, 4181 Dog Creek Ridge, 4056 Pointer, 4115 Canyon Mountain, 4107 Canyon Terrace, 4121 Airport, 4021 Poleline, 4102 Prospector, 4100 Bobcat, 4071 Round Top, 4118 Beech Creek, 4092 Little Beech Creek, 4002 Fall Creek, 4158 Fall Mountain, 4159 Miller Mountain, 4059 Cold Springs, 4077 Moon Mountain, 4006 Damon Creek, 4177 Clark Creek, 4109 Big Canyon Creek, 2645 Clark, and 2551 Clinton Harris. Information on these allotments can be found in Appendix B.

Water Temperature: According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Water temperatures will not be adversely affected from these grazing allotments because the timing of the use is when grasses and forbs are more palatable and preferable than shade producing shrubs and trees. With a spring use treatment on low elevation pastures, grazing in riparian areas is finished when enough soil moisture remains for nearly complete herbaceous regrowth. Regrowth will occur after short spring/summer use periods in higher elevation forested allotments too. This is because these areas receive more precipitation. This protects streambank stability and provides bank roughness to catch sediments during high flows. Although there is the possibility of a small reduction of the amount of shade due to plant removal and trampling, this effect will be insignificant and should not be measurable.

Sediment/Turbidity: These streams generally have low turbidity levels. Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should be insignificant and not degrade steelhead habitat.

Chemical Contamination/Turbidity: There is the possibility of increased bacteria counts due to grazing. However, the timing of grazing treatments, and restricted duration, help prevent cattle from concentrating use near riparian areas, as upland grasses are still green and palatable. Stream flows often are still elevated in April-June, diluting potential contaminates. No significant or measurable impact expected.

Physical Barriers: Grazing will not cause migration barriers:

Substrate Embeddedness: Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or

storm event flows. This amount of sediment should not be significant enough to measurably increase substrate embeddedness above current levels.

Large Wood: Current grazing systems are established to protect riparian vegetation by utilizing the area at the time of year when woody vegetation is less palatable. Grazing will not limit development of future large wood to streams or affect current large wood sources potentially available to fall into streams.

Pool Frequency: Because grazing management strategies are not expected to adversely impact current or potential instream large wood, or streambank stability, no changes in pool frequencies is anticipated.

Pool Quality: Potential sediment inputs from livestock trampling is not expected to significantly affect pool quality, because of limited time that livestock have access to streams. Regrowth of riparian vegetation after grazing use will buffer the stream from overland sediment delivery.

Off-Channel Habitat: Off channel habitat should not be affected because grazing use is limited to seasons when upland vegetation is palatable, and use is not concentrated in riparian zones.

Refugia: Grazing management should not degrade spawning, rearing, and migratory habitat for steelhead and chinook. Grazing strategies are designed to protect riparian areas so no negative effects are expected.

Wetted Width/Max Depth Ratio: Livestock concentration/trampling along streams is minimized by these grazing treatments. Therefore, streambank damage, which causes and erosion and widening of stream channels, is not expected to occur.

Streambank Condition: Current grazing strategies are designed to minimize bank damage from trampling and the removal of vegetation. Regrowth of grasses occurs after spring grazing treatments. This protects streambank stability and provides bank roughness to catch sediments during high flows. Grazing management will not significantly effect the stability of the streambanks.

Floodplain Connectivity: Grazing management will not effect floodplain function and connection to the stream during flood events. Wetland areas and riparian vegetation will be maintained.

Changes in Peak/Base Flow: Grazing activities are not likely to cause changes to flow regimes. This indicator is primarily affected by timber harvest activities which alter snow retention and snowmelt timing.
Drainage Network Increase: Grazing will not effect the drainage network.
Road Density and Location: Road densities will not change with grazing management.

Disturbance History: Disturbance history will not be effected by grazing management.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, grazing systems were designed to protect and improve the riparian areas.

Table 5. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for **Range Allotments on the following streams; Dads, Dixie, Standard, W. Fork Standard, Comer, Bull Run, Bear, Indian, W. Fork Little Indian, Pine, Bear Gulch, Grub, Little Pine, Canyon, Sheep Gulch, Hanscombe tributary, Beech, Capsuttle, McClellan, Big Canyon, West Birch, West Birch tributary, and East Birch Creeks.**

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature	X				X	
Sediment	X	X			X	
Chem. Contam./Nut.	X				X	
Habitat Access: Physical Barriers		X			X	
Habitat Elements: Substrate		X			X	
Large Woody Debris	X				X	
Pool Frequency			X		X	
Pool Quality	X	X			X	
Off-Channel Habitat	N/A				X	
Refugia	X	X			X	
Channel Cond. & Dyn: Width/Depth Ratio		X			X	
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows		X			X	
Drainage Network Increase			X		X	
Watershed Conditions: Road Dens. & Loc.		X			X	
Disturbance History	X				X	
Riparian Reserves	N/A			N/A		

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments; 4016 Dixie, 4045 Bear Gulch, 4056 Pointer, 4099 Indian and 4115 Canyon Mountain. These allotments contain the following streams; Dads, Dixie, Standard, W. Fork Standard, Comer, Bull Run, Bear, Indian, Pine, Bear Gulch, and Little Pine Creeks.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is more than a negligible probability of take of proposed/listed anadromous salmonids. This is because grazing management is occurring during spawning and rearing of summer steelhead. Although it is a low probability, there is potential interactions between spawning and rearing fish, and cattle, when cattle are watering. This has the potential of harassing steelhead that are trying to spawn, and the displacement of summer steelhead into a more hostile environment. **Likely to Adversely Affect**

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments; 4174 Reynolds Creek, 4047 Little Indian, 4141 Pine Creek, 4181 Dog Creek Ridge, 4107 Canyon Terrace, 4121 Airport, 4021 Poleline, 4102 Prospector, 4100 Bobcat, 4071 Round Top, 4118 Beech Creek, 4092 Little Beech Creek, 4002 Fall Creek, 4158 Fall Mountain, 4159 Miller Mountain, 4059 Cold Springs, 4077 Moon Mountain, 4006 Damon Creek, 4177 Clark Creek, 4109 Big Canyon Creek, 2645 Clark, and 2551 Clinton Harris. These allotments contain the following streams; Beech, Capsuttle, McClellan, Big Canyon, West Birch, West Birch tributary, East Birch, W. Fork Little Indian, Grub, Canyon, Hanscombe tributary, and Sheep Gulch Creeks.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is less than a negligible probability of take of proposed/listed anadromous salmonids. These grazing strategies were designed to improve riparian habitat and minimize livestock use along fish bearing streams. Grazing management activities in 1999 will be nearly finished before the effective listing date of steelhead (5/24/99). Potential interactions between spawning and rearing fish, and livestock, when cattle are watering is less than negligible. **Not Likely to Adversely Affect**

Rational for Checklist Ratings of Effects for Population and Environmental Indicators (See Table 6) for <u>Range on Allotments for the streams; John Day River, Warrens, West Dry, Marks, Flat, Franks, Belshaw, Ferris, Sheep Gulch, Battle and tribs, Cottonwood, Dyke, Day, Rock and unnamed trib., Birch, Squaw, Indian, Frank, Buckhorn, Willow, Fopiano, Dick, Johnny, Bull Canyon, Deep, Harry, McGinnis, Branson, Bone, Rose, Spring, Holmes, Burnt Corral, Johnson, Hide and Seek, unnamed trib., and China Hat Creeks</u>.

The following allotments are included in this rating; 4129 Belshaw, 4023 Triple Fork, 4020 Murderers Creek, 4061 Scott Creek, 4066 Kidd Creek, 4038 Dayville, 4049 Battle Creek, 4163 Creek, 4076 Cottonwood Creek, 4128 Cummings Creek, 4151 Kinzua, 4060 Baker City Gulch, 4041 Franks Creek, 4065 E. Franks Creek, 4120 Ferris Creek, 4069 Sheep Gulch, 4007 Windy Point, 2642 Mascall, 2645 Clark, 4131 Day Creek, 2660 Rattlesnake Creek, 2559 Fopiano, 2639 Tubb Creek, 2558 Squaw Creek, 2501 Herb Asher, 2662 Johnson Creek, 4145 Two County, 4074 McCarty Creek, 4087 Blue Basin, 4001 Johnny Creek, and 4176 Dick Creek. Information on these allotments can be found in Appendix B.

Water Temperature: According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Water temperatures will not be adversely affected from these grazing allotments because the timing of the use is when grasses and forbs are more palatable and preferable than shade producing shrubs and trees. With a spring use treatment on low elevation pastures, grazing in riparian areas is finished when enough soil moisture remains for nearly complete herbaceous regrowth. Regrowth will occur after short spring/summer use periods in higher elevation forested allotments too. This is because these areas receive more precipitation. This protects streambank stability and provides bank roughness to catch sediments during high flows. Although there is the possibility of a small reduction of the amount of shade due to plant removal and trampling, this effect will be insignificant and should not be measurable.

Sediment/Turbidity: These streams generally have low to moderate turbidity levels. Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should be insignificant and not degrade steelhead habitat.

Chemical Contamination/Turbidity: There is the possibility of increased bacteria counts due to grazing. However, the timing of grazing treatments, and restricted duration, help prevent cattle from concentrating use near riparian areas, as upland grasses are still green and palatable. Stream flows often are still elevated in April-June, diluting potential contaminates. No significant or measurable impact expected.

Physical Barriers: Grazing will not cause migration barriers:
Substrate Embeddedness: Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or

storm event flows. This amount of sediment should not be significant enough to measurably increase substrate embeddedness above current levels.

Large Wood: Current grazing systems are established to protect riparian vegetation by utilizing the area at the time of year when woody vegetation is less palatable. Grazing will not limit development of future large wood to streams or affect current large wood sources potentially available to fall into streams.

Pool Frequency: Because grazing management strategies are not expected to adversely impact current or potential instream large wood, or streambank stability, no changes in pool frequencies is anticipated.

Pool Quality: Potential sediment inputs from livestock trampling is not expected to significantly affect pool quality, because of limited time that livestock have access to streams. Regrowth of riparian vegetation after grazing use will buffer the stream from overland sediment delivery.

Off-Channel Habitat: Off channel habitat should not be affected because grazing use is limited to seasons when upland vegetation is palatable, and use is not concentrated in riparian zones.

Refugia: Grazing management should not degrade spawning, rearing, and migratory habitat for steelhead trout. Grazing strategies are designed to protect riparian areas so no adverse effects are expected.

Wetted Width/Max Depth Ratio: Livestock concentration/trampling along streams is minimized by these grazing treatments. Therefore, streambank damage, which causes and erosion and widening of stream channels, is not expected to occur.

Streambank Condition: Current grazing strategies are designed to minimize bank damage from trampling and the removal of vegetation. Regrowth of grasses occurs after spring grazing treatments. This protects streambank stability and provides bank roughness to catch sediments during high flows. Grazing management will not significantly effect the stability of the streambanks.

Floodplain Connectivity: Grazing management will not effect floodplain function and connection to the stream during flood events. Wetland areas and riparian vegetation will be maintained.

Changes in Peak/Base Flow: Grazing activities are not likely to cause changes to flow regimes. This indicator is primarily affected by timber harvest activities which alter snow retention and snowmelt timing.
Drainage Network Increase: Grazing will not effect the drainage network.

Road Density and Location: Road densities will not change with grazing management.

Disturbance History: Disturbance history will not be effected by grazing management.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, grazing systems were designed to protect and improve riparian areas.

Table 6. Showing the checklist for documenting environmental base line and effects of proposed actions on relevant indicators for **range allotments on the following streams; John Day River, Warrens, West Dry, Marks, Flat, Franks, Belshaw, Ferris, Sheep Gulch, Battle and tribs, Cottonwood, Dyke, Day, Rock and unnamed trib., Birch, Squaw, Indian, Frank, Buckhorn, Willow, Fopiano, Dick, Johnny, Bull Canyon, Deep, Harry, McGinnis Branson, Bone, Rose, Spring, Holmes, Burnt Corral, Johnson, Hide and Seek, unnamed trib., and China Hat Creeks**.

PATHWAYS: INDICATORS	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature			X		X	
Sediment		X			X	
Chem. Contam./Nut.	X	X			X	
Habitat Access: Physical Barriers	X				X	
Habitat Elements: Substrate		X	X		X	
Large Woody Debris			X		X	
Pool Frequency			X		X	
Pool Quality		X	X		X	
Off-Channel Habitat		X			X	
Refugia			X		X	
Channel Cond. & Dyn: Width/Depth Ratio			X		X	
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows		X			X	
Drainage Network Increase		X			X	
Watershed Conditions: Road Dens. & Loc.		X			X	
Disturbance History	X				X	
Riparian Reserves	N/A				X	

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments; 2662 Johnson Creek, 4145 Two County, 4076 Cottonwood Creek and 4151 Kinzua. These allotments contain the following streams; John Day River, Cottonwood, Dyke, Johnson, Hide and Seek, unnamed trib., China Hat, Deep, Harry, McGinnis, Bone, Rose, Spring, Holmes, and Burnt Corral, Squaw, Gilmore and Franks Creeks.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is more than a negligible probability of take of proposed/listed anadromous salmonids. This is because grazing management is occurring during spawning and rearing of summer steelhead. Although it is a low probability there is potential interactions between spawning and rearing fish, and cattle, when cattle are watering. This has the potential of harassing steelhead that are trying to spawn, trampling of redds, and the displacement of fry into a more hostile environment. **Likely to Adversely Affect**

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments: 4129 Belshaw, 4023 Triple Fork, 4061 Scott Creek, 4066 Kidd Creek, 4038 Dayville, 4049 Battle Creek, 4163 Creek, 4128 Cummings Creek, 4060 Baker City Gulch, 4041 Franks Creek, 4065 E. Franks Creek, 4120 Ferris Creek, 4069 Sheep Gulch, 4007 Windy Point, 2642 Mascall, 2645 Clark, 4131 Day Creek, 2660 Rattlesnake Creek, 2559 Fopiano, 2639 Tubb Creek, 2558 Squaw Creek, 2501 Herb Asher, 4074 McCarty Creek, 4087 Blue Basin, 4001 Johnny Creek, and 4176 Dick Creek. These allotments contain the following streams; John Day River, Warrens, West Dry, Marks, Flat, Franks, Belshaw, Ferris, Sheep Gulch, Battle and tribs, Day, Rock and unnamed trib., Birch, Squaw, Indian, Frank, Buckhorn, Willow, Fopiano, Dick, Johnny, Bull Canyon, and Branson Creeks.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is less than a negligible probability of take of proposed/listed anadromous salmonids. These grazing strategies were designed to improve riparian habitat and minimize livestock use along fish bearing streams. Grazing management activities in 1999 will end nearly before the effective listing date of steelhead (5/24/99). Potential interactions between spawning and rearing fish, and livestock, when cattle are watering is less than negligible. **Not Likely to Adversely Affect**

Rational for

Checklist Ratings for Population and Environmental Indicators (See Table 7) for <u>Range Allotments on the South Fork John Day River and the following tributaries; Johnson, Smoky, Tunnel, Oliver, Young, Murderers, Cabin, Frazier, Martin, Cougar Gulch, Deer, Round, and Dugout Creeks.</u>

This rating includes the following allotments; 4020 Murderers Creek, 4124 Smoky Creek, 4119 Black Canyon, 4103 Rockpile, 4164 Corral Gulch, and 4052 Big Baldy. Information on these allotments can be found in Appendix B.

Water Temperature: According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Water temperatures will not be adversely affected from these grazing allotments because the timing of use is when grasses and forbs are more palatable and preferable than shade producing shrubs and trees. With a spring use treatment on low elevation pastures, grazing in riparian areas is finished when enough soil moisture remains for nearly complete herbaceous regrowth. Regrowth will occur after short spring/summer use periods in higher elevation forested allotments too. This is because these areas receive more precipitation. This protects streambank stability and provides bank roughness to catch sediments during high flows. Although there is the possibility of a small reduction of the amount of shade due to plant removal and trampling, this effect will be insignificant and should not be measurable.

Sediment/Turbidity: These streams generally have moderate to high turbidity levels, particularly on the South Fork John Day River. Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should be insignificant and not degrade steelhead habitat.

Chemical Contamination/Turbidity: There is the possibility of increased bacteria counts due to grazing. However, the timing of grazing treatments, and restricted duration, help prevent cattle from concentrating use near riparian areas, as upland grasses are still green and palatable. Stream flows often are still elevated in April-June, diluting potential contaminates. No significant or measurable impact expected.

Physical Barriers: Grazing will not cause migration barriers:

Substrate Embeddedness: Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should not be significant enough to measurably increase substrate embeddedness above current levels.

Large Wood: Current grazing systems are established to protect riparian vegetation by utilizing the area at the time of year when woody vegetation is less palatable. Grazing will not limit

development of future large wood to streams or affect current large wood sources potentially available to fall into streams.

Pool Frequency: Because grazing management strategies are not expected to adversely impact current or potential instream large wood, or streambank stability, no changes in pool frequencies is anticipated.

Pool Quality: Potential sediment inputs from livestock trampling is not expected to significantly affect pool quality, because of limited time that livestock have access to streams. Regrowth of riparian vegetation after grazing use will buffer the stream from overland sediment delivery.

Off-Channel Habitat: Off channel habitat should not be affected because grazing use is limited to seasons when upland vegetation is palatable, and use is not concentrated in riparian zones.

Refugia: Grazing management should not degrade spawning, rearing, and migratory habitat for steelhead trout. Grazing strategies are designed to protect riparian areas so no adverse effects are expected.

Wetted Width/Max Depth Ratio: Livestock concentration/trampling along streams is minimized by these grazing treatments. Therefore, streambank damage, which causes and erosion and widening of stream channels, is not expected to occur.

Streambank Condition: Current grazing strategies are designed to minimize bank damage from trampling and the removal of vegetation. Regrowth of grasses occurs after spring grazing treatments. This protects streambank stability and provides bank roughness to catch sediments during high flows. Grazing management will not significantly effect the stability of the streambanks.

Floodplain Connectivity: Grazing management will not effect floodplain function and connection to the stream during flood events. Wetland areas and riparian vegetation will be maintained.

Changes in Peak/Base Flow: Grazing activities are not likely to cause changes to flow regimes. This indicator is primarily affected by timber harvest activities which alter snow retention and snowmelt timing.

Drainage Network Increase: Grazing will not effect the drainage network.

Road Density and Location: Road densities will not change with grazing management.

Disturbance History: Disturbance history will not be effected by grazing management.
Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, grazing systems were designed to protect and improve the riparian areas.

Table 7. showing the checklist for documenting environmental base line and effects of **range allotments** on relevant indicators for following streams; **South Fork John Day River, Johnson, Smoky, Tunnel, Oliver, Young, Murderers, Cabin, Frazier, Martin, Cougar Gulch, Deer, Round, and Dugout Creeks.**

PATHWAYS: INDICATORS	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	Properly Functioning	At Risk	Not Properly Functioning	Restore	Maintain	Degrade
Water Quality: Temperature		X			X	
Sediment			X		X	
Chem. Contam./Nut.	X				X	
Habitat Access: Physical Barriers			X		X	
Habitat Elements: Substrate			X		X	
Large Woody Debris			X		X	
Pool Frequency			X		X	
Pool Quality		X			X	
Off-Channel Habitat		X			X	
Refugia		X			X	
Channel Cond. & Dyn: Width/Depth Ratio		X			X	
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows		X			X	
Drainage Network Increase		X			X	
Watershed Conditions: Road Dens. & Loc.		X	X		X	
Disturbance History	X				X	
Riparian Reserves	N/A			N/A		

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotment; 4103 Rockpile. This allotment contain the following streams; South Fork John Day River, Frazier, Martin, and Cougar Gulch Creeks.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is more than a negligible probability of take of proposed/listed anadromous salmonids. This is because grazing management is occurring during spawning and rearing of summer steelhead. Although it is a low probability, there are potential interactions between spawning and rearing fish, and cattle, when cattle are watering. This has the potential of harassing steelhead that are trying to spawn, trampling of redds, and the displacement of fry into a more hostile environment. **Likely to Adversely Affect**

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments; 4020 Murderers Creek, 4124 Smoky Creek, 4119 Black Canyon, 4164 Corral Gulch, and 4052 Big Baldy. These allotments contain the following streams; South Fork John Day River, Johnson, Smoky, Tunnel, Oliver, Young, Murderers, Cabin, Deer, Round, and Dugout Creeks.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is less than a negligible probability of take of proposed/listed anadromous salmonids. These grazing strategies were designed to improve riparian habitat and minimize livestock use along fish bearing streams. Grazing management activities in 1999 will end before the effective listing date of steelhead (5/24/99). Potential interactions between spawning and rearing fish, and livestock, when cattle are watering is less than negligible. **Not Likely to Adversely Affect**

Rational for Checklist Ratings of Effects for Population and Environmental Indicators (See Table 8) for <u>Range Allotments on the South Fork John Day River and tributaries; Sunflower, Wildcat, Indian, Sock Hollow, Dry Soda, Abbott, Poison, Flat, Utley, Delles, Packwood, and Tamarack Creeks.</u> *Streams in this list are upstream of a natural barrier to steelhead trout (Izee Falls on the SF John Day River), and are occupied by redband trout and non-game species only. Stream parcels on BLM lands are 0.1 to 30 riverine miles upstream of occupied steelhead habitat below Izee Falls.*

This rating contains the follow allotments; 4052 Big Baldy, 4186 Big Flats, 4110 Funny Butte, 4106 Izee, 4154 Morgan Creek, 4067 Sheep Creek Butte, 4104 South Fork, 4155 Blackhorse Draw. Information on these allotments can be found in Appendix B.

Water Temperature: According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Water temperatures to occupied steelhead habitats downstream will not be adversely affected from these grazing allotments, because the timing of use is when grasses and forbs are more palatable and preferable than shade producing shrubs and trees. With a spring use treatment on low elevation pastures, grazing in riparian areas is finished when enough soil moisture remains for nearly complete herbaceous regrowth. Regrowth will occur after short spring/summer use periods in higher elevation forested allotments too. This is because these areas receive more precipitation. This protects streambank stability and provides bank roughness to catch sediments during high flows. Although there is the possibility of a small reduction of the amount of shade due to plant removal and trampling, this effect will be insignificant and should not be measurable.

Sediment/Turbidity: These streams generally have moderate to high turbidity levels, particularly on the South Fork John Day River. Potentially small amounts of sediment could enter streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should be insignificant and not degrade occupied steelhead habitat, which is 0-30 miles downstream in the SFJDR.

Chemical Contamination/Turbidity: There is the possibility of increased bacteria counts due to grazing. However, the timing of grazing treatments, and restricted duration, help prevent cattle from concentrating use near riparian areas, as upland grasses are still green and palatable. Stream flows in the SFJDR often are still elevated in April-June, diluting potential contaminates. No significant or measurable impact expected.

Physical Barriers: Grazing will not cause migration barriers:

Substrate Embeddedness: Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should not be significant enough to measurably increase substrate embeddedness to downstream steelhead habitats.

Large Wood: Current grazing systems will protect riparian vegetation by only using riparian areas when woody vegetation is less palatable. Grazing will not limit development of future large wood to streams or affect current large wood sources potentially available to fall into streams. Grazing will have no effect on instream large wood to downstream occupied habitats.

Pool Frequency: These stream segments are not accessible by steelhead trout. Not Applicable.

Pool Quality: These stream segments are not accessible by steelhead trout. Not Applicable.

Off-Channel Habitat: These stream segments are not accessible by steelhead trout. Not Applicable.

Refugia: These stream segments are not accessible by steelhead trout. Not Applicable.

Wetted Width/Max Depth Ratio: These stream segments are not accessible by steelhead trout. Not Applicable.

Streambank Condition: These stream segments are not accessible by steelhead trout. Not Applicable.

Floodplain Connectivity: These stream segments are not accessible by steelhead trout. Not Applicable.

Changes in Peak/Base Flow: These grazing activities are not likely to cause changes to flow regimes that could affect occupied steelhead habitat 0.1-30 miles downstream. This indicator is primarily affected by timber harvest activities which alter snow retention and snowmelt timing.

Drainage Network Increase: Grazing will not effect the drainage network.

Road Density and Location: Road densities will not change with grazing management.

Disturbance History: Disturbance history will not be affected by grazing management.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, grazing systems were designed to protect and improve the riparian areas.

Table 8. Showing the checklist for documenting environmental base line and effects of **range allotments** on relevant indicators for following steams; **South Fork John Day River and tributaries; Sunflower, Wildcat, Indian, Sock Hollow, Dry Soda, Abbott, Poison, Flat, Utley, Delles, Packwood, and Tamarack Creeks.**

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature	N/A				X	
Sediment		X	X		X	
Chem. Contam./Nut.		X			X	
Habitat Access: Physical Barriers	N/A				X	
Habitat Elements: Substrate		X	X		X	
Large Woody Debris			X		N/A	
Pool Frequency			X		N/A	
Pool Quality		X			N/A	
Off-Channel Habitat		X			NA	
Refugia	N/A				N/A	
Channel Cond. & Dyn: Width/Depth Ratio		X			N/A	
Streambank Cond.		X			N/A	
Floodplain Connectivity	X	X			N/A	
Flow/Hydrology: Peak/Base Flows		X			X	
Drainage Network Increase		X			X	
Watershed Conditions: Road Dens. & Loc.		X			X	
Disturbance History	X				X	
Riparian Reserves	N/A			N/A		

Answers to the Dichotomous Key For Making ESA Determination of Effects for Range Allotments on the South Fork John Day River and tributaries; Sunflower, Wildcat, Indian, Sock Hollow, Dry Soda, Abbott, Poison, Flat, Utley, Delles, Packwood, and Tamarack Creeks.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead are downstream of these allotments in the S. Fork John Day River, below Izee Falls

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

No, these grazing allotments are not adjacent to occupied steelhead habitat. A natural barrier downstream prevents steelhead trout from accessing these streams. There is less than a negligible probability of take of proposed/listed anadromous salmonids. This is because grazing management on these streams is designed to maintain or improve riparian conditions. **Not Likely to Adversely Affect**

Rational for Checklist Ratings for Population and Environmental Indicators (See Table 9) for <u>Range Allotments on the North Fork John Day River</u> *The North Fork John Day River corridor in this area supports winter rearing habitat for juvenile steelhead trout, and serves as a migration corridor. No spawning or summer rearing habitat exists in this reach of the river.*

This rating includes the following allotments; 4009 Birch Creek, 4035 Rim, 4012 River, 4083 19-20, 4028 Neal Butte, 4122 Big Bend, 4003 Slickear Mountain, 4042 Johnny Cake Mountain, 4029 North Fork, and 4125 Umatilla. Information on these allotments can be found in Appendix B.

Water Temperature: According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Water temperatures will not be adversely affected from these grazing allotments because the timing of use is when grasses and forbs are more palatable and preferable than shade producing shrubs and trees. With a spring use treatment on low elevation pastures, grazing in riparian areas is finished when enough soil moisture remains for nearly complete herbaceous regrowth. This protects streambank stability and provides bank roughness to catch sediments during high flows. Although there is the possibility of a small reduction of the amount of shade due to plant removal and trampling, this effect will be insignificant on streams as large as the mainstem NFJDR.

Sediment/Turbidity: The NFJDR generally has low to moderate turbidity levels. Potentially small amounts of sediment could enter the river when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should be insignificant and not degrade steelhead winter rearing habitat.

Chemical Contamination/Turbidity: There is the possibility of increased bacteria counts due to grazing. However, the timing of grazing treatments, and restricted duration, help prevent cattle from concentrating use near riparian areas, as upland grasses are still green and palatable. Stream flows often are still elevated in April-June, diluting potential contaminates. No significant or measurable impact expected.

Physical Barriers: Grazing will not cause migration barriers:

Substrate Embeddedness: Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should not be significant enough to measurably increase substrate embeddedness above current levels.

Large Wood: Current grazing systems are established to protect riparian vegetation by utilizing the area at the time of year when woody vegetation is less palatable. Grazing will not limit development of future large wood to streams or affect current large wood sources potentially available to fall into streams.

Pool Frequency: Because grazing management strategies are not expected to adversely impact current or potential instream large wood, or streambank stability, no changes in pool frequencies is anticipated.

Pool Quality: Potential sediment inputs from livestock trampling is not expected to significantly affect pool quality, because of limited time that livestock have access to the river. Regrowth of riparian vegetation after grazing use will buffer the stream from overland sediment delivery.

Off-Channel Habitat: Off channel habitat should not be affected because grazing use is limited to seasons when upland vegetation is palatable, and use is not concentrated in riparian zones.

Refugia: Grazing management should not degrade spawning, rearing, and migratory habitat for steelhead trout. Grazing strategies are designed to protect riparian areas so no adverse effects are expected.

Wetted Width/Max Depth Ratio: Livestock concentration/trampling along streams is minimized by these grazing treatments. Therefore, streambank damage, which causes and erosion and widening of stream channels, is not expected to occur.

Streambank Condition: Current grazing strategies are designed to minimize bank damage from trampling and the removal of vegetation. Regrowth of grasses occurs after spring grazing treatments. This protects streambank stability and provides bank roughness to catch sediments during high flows. Grazing management will not significantly effect the stability of the streambanks.

Floodplain Connectivity: Grazing management will not effect floodplain function and connection to the stream during flood events. Wetland areas and riparian vegetation will be maintained.

Changes in Peak/Base Flow: Grazing activities are not likely to cause changes to flow regimes. This indicator is primarily affected by timber harvest activities which alter snow retention and snowmelt timing.

Drainage Network Increase: Grazing will not effect the drainage network.

Road Density and Location: Road densities will not change with grazing management.

Disturbance History: Disturbance history will not be effected by grazing management.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, grazing systems were designed to protect and improve the riparian areas.

Table 9. Showing the checklist for documenting environmental base line and effects of the proposed on relevant indicators for **range allotments on the North Fork John Day River**.

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature			X		X	
Sediment		X			X	
Chem. Contam./Nut.	X				X	
Habitat Access: Physical Barriers	X				X	
Habitat Elements: Substrate		X			X	
Large Woody Debris			X		X	
Pool Frequency			X		X	
Pool Quality		X			X	
Off-Channel Habitat			X		X	
Refugia			X		X	
Channel Cond. & Dyn: Width/Depth Ratio			X		X	
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows			X		X	
Drainage Network Increase		X			X	
Watershed Conditions: Road Dens. & Loc.		X			X	
Disturbance History	X				X	
Riparian Reserves	N/A			N/A		

Answers to the Dichotomous Key For Making ESA Determination of Effects for the Range Allotments on the North Fork John Day River.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

No, there is less than a negligible probability of take of proposed/listed anadromous salmonids. Grazing activities on the North Fork John Day River are designed to protect riparian vegetation. Spawning activities do not occur in this reach of the river. **Not Likely to Adversely Affect**

Rational for Checklist Ratings for Population and Environmental Indicators (See Table 10) for Range Allotments on tributaries of the North Fork John Day River; Sulphur Gulch, Potamus, Mallory, Graves, Squaw, Cabin, Little Wall, Bacon, Three-Trough, Cottonwood, E.F. Cottonwood, Board, Cougar, Cougar trib., Squaw, W. F. Cochran, Rudio, Gilmore, Straight, and Birch Creeks.

This rating includes the following allotments; 4009 Birch Creek, 4145 Two County, 4151 Kinzua, 4156 Rudio Creek, 4037 Juniper, 4025 Portugese, 4030 Powersite, 4094 Dry Corner, 4031 Coyote Field, 4069 Big Springs, 4112 Cottonwood Forks, 4085 Barbor Pole, and 4022 Long Hollow. Information on these allotments can be found in Appendix B.

Water Temperature: According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Water temperatures will not be adversely affected from these grazing allotments because the timing of use is when grasses and forbs are more palatable and preferable than shade producing shrubs and trees. With a spring use treatment on low elevation pastures, grazing in riparian areas is finished when enough soil moisture remains for nearly complete herbaceous regrowth. Regrowth will occur after short spring/summer use periods in higher elevation forested allotments too. This is because these areas receive more precipitation. This protects streambank stability and provides bank roughness to catch sediments during high flows. Although there is the possibility of a small reduction of the amount of shade due to plant removal and trampling, this effect will be insignificant and should not be measurable.

Sediment/Turbidity: These streams generally have low to moderate turbidity levels. Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should be insignificant and not degrade steelhead habitat.

Chemical Contamination/Turbidity: There is the possibility of increased bacteria counts due to grazing. However, the timing of grazing treatments, and restricted duration, help prevent cattle from concentrating use near riparian areas, as upland grasses are still green and palatable. Stream flows often are still elevated in April-June, diluting potential contaminates. No significant or measurable impact expected.

Physical Barriers: Grazing will not cause migration barriers:

Substrate Embeddedness: Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should not be significant enough to measurably increase substrate embeddedness above current levels.

Large Wood: Current grazing systems are established to protect riparian vegetation by utilizing the area at the time of year when woody vegetation is less palatable. Grazing will not limit development of future large wood to streams or affect current large wood sources potentially available to fall into streams.

Pool Frequency: Because grazing management strategies are not expected to adversely impact current or potential instream large wood, or streambank stability, no changes in pool frequencies is anticipated.

Pool Quality: Potential sediment inputs from livestock trampling is not expected to significantly affect pool quality, because of limited time that livestock have access to streams. Regrowth of riparian vegetation after grazing use will buffer the stream from overland sediment delivery.

Off-Channel Habitat: Off channel habitat should not be affected because grazing use is limited to seasons when upland vegetation is palatable, and use is not concentrated in riparian zones.

Refugia: Grazing management should not degrade spawning, rearing, and migratory habitat for steelhead trout. Grazing strategies are designed to protect riparian areas so no adverse effects are expected.

Wetted Width/Max Depth Ratio: Livestock concentration/trampling along streams is minimized by these grazing treatments. Therefore, streambank damage, which causes and erosion and widening of stream channels, is not expected to occur.

Streambank Condition: Current grazing strategies are designed to minimize bank damage from trampling and the removal of vegetation. Regrowth of grasses occurs after spring grazing treatments. This protects streambank stability and provides bank roughness to catch sediments during high flows. Grazing management will not significantly effect the stability of the streambanks.

Floodplain Connectivity: Grazing management will not effect floodplain function and connection to the stream during flood events. Wetland areas and riparian vegetation will be maintained.

Changes in Peak/Base Flow: Grazing activities are not likely to cause changes to flow regimes. This indicator is primarily affected by timber harvest activities which alter snow retention and snowmelt timing.

Drainage Network Increase: Grazing will not effect the drainage network.
Road Density and Location: Road densities will not change with grazing management.

Disturbance History: Disturbance history will not be effected by grazing management.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, grazing systems were designed to improve riparian areas.

Table 10. Showing the checklist for documenting environmental base line and effects of the proposed on relevant indicators for **range allotments on the following tributaries of the North Fork John Day River; Sulphur Gulch, Potamus, Mallory, Graves, Squaw, Cabin, Little Wall, Bacon, Three-Trough, Cottonwood, E.F. Cottonwood, Board, Cougar, Cougar trib., Squaw, W. F. Cochran, Rudio, Gilmore, Straight, and Birch Creeks.**

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature		X	X		X	
Sediment		X			X	
Chem. Contam./Nut.	X				X	
Habitat Access: Physical Barriers	X				X	
Habitat Elements: Substrate		X			X	
Large Woody Debris		X	X		X	
Pool Frequency			X		X	
Pool Quality		X			X	
Off-Channel Habitat		X			X	
Refugia			X		X	
Channel Cond. & Dyn: Width/Depth Ratio			X		X	
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows		X			X	
Drainage Network Increase		X			X	
Watershed Conditions: Road Dens. & Loc.		X	X		X	
Disturbance History	X				X	
Riparian Reserves	N/A			N/A		

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments; 4145 Two County and 4151 Kinzua. These allotments contain the following tributaries to the North Fork John Day River; Rudio, Squaw, and Gilmore Creeks.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is more than a negligible probability of take of proposed/listed anadromous salmonids. This is because grazing management is occurring during spawning and rearing of summer steelhead. Although it is a low probability there is potential interactions between spawning and rearing fish, and cattle, when cattle are watering. This has the potential of harassing steelhead that are trying to spawn, trampling of redds, and the displacement of fry into a more hostile environment. **Likely to Adversely Affect**

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments; 4009 Birch Creek, 4156 Rudio Creek, 4037 Juniper, 4025 Portugese, 4030 Powersite, 4094 Dry Corner, 4031 Coyote Field, 4069 Big Springs, 4112 Cottonwood Forks, 4085 Barbor Pole, and 4022 Long Hollow. These allotments contain the following tributaries to the North Fork John Day River; Sulphur Gulch, Potamus, Mallory, Graves, Squaw, Cabin, Little Wall, Bacon, Three-Trough, Cottonwood, E.F. Cottonwood, Board, Cougar, Cougar trib., Squaw, W. F. Cochran, Rudio, Gilmore, Straight, and Birch Creeks.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is less than a negligible probability of take of proposed/listed anadromous salmonids. These grazing strategies were designed to improve riparian habitat and minimize livestock use along fish bearing streams. Grazing management activities in 1999 will be nearing completion before the effective listing date of steelhead (5/24/99). Potential interactions between spawning and rearing fish, and livestock, when cattle are watering is less than negligible. **Not Likely to Adversely Affect**

Rational for Checklist Ratings for Population and Environmental Indicators (See Table 11) for Range Allotments on the Middle Fork John Day River and the following tributaries; Mosquito, Huckleberry, Slide, Bum, Long, Jordan, Cole Canyon, Troff Canyon, and Threemile Creeks.

This rating includes the following allotments; 4003 Slickear Mountain, 4014 Middle Fork, 4046 Threemile, 4134 Lookout, 4135 Gibson Creek, 4136 Baldwin Gulch, and 4184 Pass Creek. Information on these allotments can be found in Appendix B.

Water Temperature: According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Water temperatures will not be adversely affected from these grazing allotments because the timing of use is when grasses and forbs are more palatable and preferable than shade producing shrubs and trees. With a spring use treatment on low elevation pastures, grazing in riparian areas is finished when enough soil moisture remains for nearly complete herbaceous regrowth. This protects streambank stability and provides bank roughness to catch sediments during high flows. Although there is the possibility of a small reduction of the amount of shade due to plant removal and trampling, this effect will be insignificant and should not be measurable.

Sediment/Turbidity: These streams generally have low to moderate turbidity. Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should be insignificant and not degrade steelhead habitat.

Chemical Contamination/Turbidity: There is the possibility of increased bacteria counts due to grazing. However, the timing of grazing treatments, and restricted duration, help prevent cattle from concentrating use near riparian areas, as upland grasses are still green and palatable. Stream flows often are still elevated in April-June, diluting potential contaminates. No significant or measurable impact expected.

Physical Barriers: Grazing will not cause migration barriers:

Substrate Embeddedness: Potentially a small amount of sediment could enter the streams when cattle are watering. Regrowth of vegetation after the short use period will recover most areas trampled by livestock, thus minimizing areas that could by be subject to erosion during runoff or storm event flows. This amount of sediment should not be significant enough to measurably increase substrate embeddedness above current levels.

Large Wood: Current grazing systems are established to protect riparian vegetation by utilizing the area at the time of year when woody vegetation is less palatable. Grazing will not limit development of future large wood to streams or affect current large wood sources potentially available to fall into streams.

Pool Frequency: Because grazing management strategies are not expected to adversely impact current or potential instream large wood, or streambank stability, no changes in pool frequencies is anticipated.

Pool Quality: Potential sediment inputs from livestock trampling is not expected to significantly affect pool quality, because of limited time that livestock have access to streams. Regrowth of riparian vegetation after grazing use will buffer the stream from overland sediment delivery.

Off-Channel Habitat: Off channel habitat should not be affected because grazing use is limited to seasons when upland vegetation is palatable, and use is not concentrated in riparian zones.

Refugia: Grazing management should not degrade spawning, rearing, and migratory habitat for steelhead trout. Grazing strategies are designed to protect riparian areas so no adverse effects are expected.

Wetted Width/Max Depth Ratio: Livestock concentration/trampling along streams is minimized by these grazing treatments. Therefore, streambank damage, which causes and erosion and widening of stream channels, is not expected to occur.

Streambank Condition: Current grazing strategies are designed to minimize bank damage from trampling and the removal of vegetation. Regrowth of grasses occurs after spring grazing treatments. This protects streambank stability and provides bank roughness to catch sediments during high flows. Grazing management will not significantly effect the stability of the streambanks.

Floodplain Connectivity: Grazing management will not effect floodplain function and connection to the stream during flood events. Wetland areas and riparian vegetation will be maintained.

Changes in Peak/Base Flow: Grazing activities are not likely to cause changes to flow regimes. This indicator is primarily affected by timber harvest activities which alter snow retention and snowmelt timing.

Drainage Network Increase: Grazing will not effect the drainage network.

Road Density and Location: Road densities will not change with grazing management.

Disturbance History: Disturbance history will not be effected by grazing management.
Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, grazing systems were designed to improve riparian areas.

Table 11. Showing the checklist for documenting environmental base line and effects of the proposed on relevant

range allotments on the Middle Fork John Day River and the following tributaries; Mosquito, Huckleberry, Slide, Bum, Long, Jordan, Cole Canyon, Troff Canyon, and Threemile Creeks.

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature			X		X	
Sediment		X			X	
Chem. Contam./Nut.		X			X	
Habitat Access: Physical Barriers	X				X	
Habitat Elements: Substrate		X			X	
Large Woody Debris		X	X		X	
Pool Frequency			X		X	
Pool Quality		X			X	
Off-Channel Habitat			X		X	
Refugia			X		X	
Channel Cond. & Dyn: Width/Depth Ratio			X		X	
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows	X				X	
Drainage Network Increase		X			X	
Watershed Conditions: Road Dens. & Loc.		X	X		X	
Disturbance History	X				X	
Riparian Reserves	N/A			N/A		

Answers to the Dichotomous Key For Making ESA Determination of Effects for <u>Range Allotments on the Middle Fork John Day River and the following tributaries; Mosquito, Huckleberry, Slide, Bum, Long, Jordan, Cole Canyon, Troff Canyon, and Threemile Creeks.</u>

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is less than a negligible probability of take of proposed/listed anadromous salmonids. These grazing strategies were designed to improve riparian habitat and minimize livestock use along fish bearing streams. Grazing management activities in 1999 will be nearing completion before the effective listing date of steelhead (5/24/99). The MFJDR does not have suitable spawning habitat for steelhead. Potential spawning habitat in Huckleberry Creek is inaccessible to livestock because of dense woody vegetation. Potential interactions between spawning and rearing fish, and livestock, when cattle are watering is less than negligible. **Not Likely to Adversely Affect**

Rational for Checklist Ratings of Effects for Population and Environmental Indicators for <u>Range Allotments with perennial streams in the Lower John Day River Basin.</u>

The following allotments are included in this rating: 2512 Big Muddy, 2514 Black Rock Association, 2516 Gable Creek, 2518 Pine Creek, 2523 Kohler Creek, 2531 Circle Bar, 2533 Sutton Mountain, 2545 Cherry Creek, 2554 Charles Hill, 2563 Horseshoe Creek, 2565 Leroy A. Britt, 2584 Catherine Mauer, 2587 Corral Canyon, 2598 Hay Creek, 2608 Rattray, 2609 Crown Rock, 2611 Van Rietmann, 2613 Frank Robison, 2625 Stirewalt, 2626 Harper Mountain, 4093 West Bologna Creek. Actual grazing prescriptions and systems vary between these allotments. Most are grazed in early spring so as to enhance riparian production and recovery. A minor component are grazed in the hot season, which can stall maturation and vigor of riparian vegetation. This includes the Pine Creek Allotment (2518).

Water Temperature: According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Water temperatures will not be adversely affected from these grazing allotments because the timing of the use is when grasses and forbs are more palatable and preferable than shade producing shrubs and trees. With a spring use treatment on low elevation pastures, grazing in riparian areas is finished when enough soil moisture remains for nearly complete herbaceous regrowth. This protects streambank stability and provides bank roughness to catch sediments during high flows. Although there is the possibility of a small reduction of the amount of shade due to plant removal and trampling, this effect will be insignificant and should not be measurable. Extended hot season grazing will hinder recovery and maturation of riparian species, maintaining current conditions on degraded riparian areas. Plant removal and trampling will limit shade producing vegetation to mature.

Sediment/Turbidity: Early season grazing systems implemented along these perennial streams protect riparian vegetation during the growing season to allow for recovery and enhancement of riparian areas. Late season grazing systems do not protect riparian vegetation and may lead to reduction of riparian vegetation along streambanks. Reduction of streambank vegetation can serve to increase sediment production within the stream.

Chemical Contamination/Nutrients: There is a possibility of increased bacteria counts due to grazing. Early season grazing will mitigate this element due to high flows of water and riparian health and vigor. Late season grazing could increase this element due to lower flows, suppression of riparian vegetation maturation, and the extended time that livestock have access to perennial streams.

Physical Barriers: Grazing will not cause any physical barriers to fish within these allotments.

Substrate: Early season grazing may affect substrate composition and embeddedness slightly. Extended hot season grazing can keep streambanks in an unstable condition from livestock trampling and vegetation removal. Active erosion of these streambanks will maintain an elevated supply of sediment to streams, reducing the likelihood of improvement to current embeddedness levels.

Large Wood: Current grazing systems are established to protect riparian vegetation by utilizing the area at the time of year when woody vegetation is less palatable. Grazing will not limit development of future large wood to streams or affect current large wood sources potentially available to fall into streams. Extended hot season grazing will limit growth and maturity of riparian trees, as upland forage become less palatable.

Pool Frequency: Early season grazing will protect riparian vegetation and bank stability and will not affect pool frequency. Extended hot season grazing likely will hinder improvements to riparian vegetation and streambank stability that are needed to facilitate pool formation.

Pool Quality: Early season grazing will protect riparian vegetation and bank stability and will not affect pool quality. Extended hot season grazing likely will hinder improvements to riparian vegetation and streambank stability that are needed to facilitate formation and maintenance of deep pools with adequate cover.

Off-Channel Habitat: Early season grazing will protect riparian vegetation and bank stability and will not affect off channel habitat. Extended hot season grazing likely will hinder improvements to riparian vegetation that are needed to facilitate off channel habitat formation.

Refugia: Early season grazing will protect riparian vegetation and bank stability and will not affect refugia. Extended hot season grazing likely will hinder improvements to riparian vegetation and streambank stability that are needed to facilitate formation and maintenance of suitable habitat refugia.

Width/Depth Ratio: Early season grazing will protect riparian vegetation and bank stability and will not affect width to depth ratios. Extended hot season grazing likely will hinder improvements to riparian vegetation and streambank stability. Condition of these habitat elements affects channel narrowing.

Streambank Condition: Early season grazing will protect riparian vegetation and bank stability and will not affect streambank condition. Extended hot season grazing likely will hinder improvements to riparian vegetation and streambank stability.

Floodplain Connectivity: Early season grazing will protect riparian vegetation and bank stability and will not affect floodplain connectivity. Extended hot season grazing likely will hinder improvements to riparian vegetation and streambank stability that are needed to maintain floodplain connectivity.

Changes in Peak/Base Flows: Early season grazing will protect riparian vegetation and bank stability and will not affect flow regime. Extended hot season grazing likely will hinder improvements to riparian vegetation and streambank stability that are needed to improve floodplain water storage, which feeds summer base flows. Grazing activities are not likely to cause changes to peak flow regimes. This indicator is primarily affected by timber harvest activities which alter snow retention and snowmelt timing.

Increases in Drainage Network: Grazing management will not affect drainage network.

Road Density and Location: Grazing management will not affect road density and location.

Disturbance History: Grazing management will not affect disturbance history.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred.

Table 12. Checklist for documenting environmental baseline conditions, and effects on relevant indicators, from **range allotments with perennial streams in the Lower John Day River Subbasin.**

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature			X		X	
Sediment			X		X	
Chem. Contam./Nut.	X				X	
Habitat Access: Physical Barriers		X			X	
Habitat Elements: Substrate		X			X	
Large Woody Debris			X		X	
Pool Frequency			X		X	
Pool Quality		X			X	
Off-Channel Habitat		X			X	
Refugia		X			X	
Channel Cond. & Dyn: Width/Depth Ratio		X			X	
Streambank Cond.			X		X	
Floodplain Connectivity		X			X	
Flow/Hydrology: Peak/Base Flows		X			X	
Drainage Network Increase	X				X	
Watershed Conditions: Road Dens. & Loc.		X			X	
Disturbance History	X				X	
Riparian Reserves	N/A				N/A	

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments with perennial streams in the Lower John Day River subbasin; 2518 Pine Creek, 4093 West Bologna Creek. These allotments contain the following tributaries to the Lower John Day River; West Bologna, Pine, and Long Hollow Creeks.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watersh 2509 Belshe, 2514 Black Rock Association, 2541 Eakin, 2547 Sixmile, 2561 Girds Creek, 2565 Leroy Britt, 2578 Logan, 2581 **Elsie Martin,** 2593 Verne A. Mobley, 2601 Nash, 2607 Pryor Farms, 2629 Tatum, 2631 Dipping Vat **ed or downstream from the watershed?**

Yes Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

Yes, the late season grazing allotment (#2518) has the potential to hinder attainment of key habitat parameters, most notably streambank stability, water temperature, and large wood. The #4093 allotment is not expected to hinder attainment of key habitat parameters.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is more than a negligible probability of take of proposed/listed anadromous salmonids. This is because grazing management is occurring during spawning and rearing of summer steelhead. Although it is a low probability there is potential interactions between spawning and rearing fish, and cattle, when cattle are watering. This has the potential of harassing steelhead that are trying to spawn, trampling of redds, and the displacement of fry into a more hostile environment. **Likely to Adversely Affect**

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments with perennial streams in the Lower John Day River subbasin; 2512 Big Muddy, 2514 Black Rock Association, 2516 Gable Creek, 2518 Pine Creek, 2523 Kohler Creek, 2531 Circle Bar, 2533 Sutton Mountain, 2545 Cherry Creek, 2554 Charles Hill, 2563 Horseshoe Creek, 2565 Leroy A. Britt, 2584 Catherine Mauer, 2587 Corral Canyon, 2598 Hay Creek, 2608 Rattray, 2609 Crown Rock, 2611 Van Rietmann, 2613 Frank Robison, 2625 Stirewalt, 2626 Harper Mountain.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is less than a negligible probability of take of proposed/listed anadromous salmonids. These grazing strategies were designed to improve riparian habitat and minimize livestock use along fish bearing streams. Grazing management activities in 1999 will be completed or nearing completion on these allotments before the effective listing date of steelhead (5/24/99). Potential interactions between spawning and rearing fish, and livestock, when cattle are watering is less than negligible. **Not Likely to Adversely Affect**

Rational for Checklist Ratings of Effects for Population and Environmental Indicators for <u>Range Allotments on Intermittent Drainage in the Lower John Day River Basin.</u>

The following allotments are included in this grouping: 2509 Belshe, 2514 Black Rock Association, 2541 Eakin, 2547 Sixmile, 2561 Girds Creek, 2565 Leroy Britt, 2578 Logan, 2581 Elsie Martin**,** 2593 Verne A. Mobley, 2601 Nash, 2607 Pryor Farms, 2629 Tatum, 2631 Dipping Vat. Actual grazing prescriptions and systems vary between these allotments, as well as steelhead habitat. Most of these allotments are grazed in the winter and/or early spring so as to enhance riparian production and recovery. Some of these allotments contain known steelhead spawning and rearing habitat while the rest contain only spawning, migratory or no known habitat, these include: 2514 Black Rock Association (No Known Habitat(NKH)), 2541 Eakin (Spawning only), 2561 Girds Creek (NKH), 2565 Leroy Britt (NKH), 2581 Elsie Martin (NKH), 2629 Tatum (Migratory only), 2607 Pryor Farms (Potential spawning and rearing).

Water Temperature: These streams are all intermittent, leaving only residual pools in the summer season. These pools are associated with bedrock constrictions and exposures. Vegetation is recovering in these areas and offering more shade for pools. Winter/Spring grazing enhances this riparian recovery, as opposed to summer grazing. Water temperatures where measured typically exceed State Water Quality Standard of 64° F.

Sediment/Turbidity: These are typically low sediment systems with very low recruitment of fine sediment. In high flow events turbidity is high with suspended sediment in the water column, however these sediments are transported through the system.

Chemical Contamination/Nutrients: There is a possibility of increased bacteria counts due to grazing. Winter/Spring grazing will reduce this impact due to high flows of water and riparian health and vigor, and good distribution of livestock.

Physical Barriers: Grazing will not introduce any physical barriers to fish within these allotments.

Substrate: Winter/Spring grazing will not affect substrate composition or embeddedness, high flows and recovery of riparian vegetation increases buffer ability of stream.

Large Wood: Grazing will not effect large wood recruitment, or presence in streams.

Pool Frequency: Winter/Spring grazing will protect riparian vegetation and bank stability and will not affect pool frequency. Pool frequency is dependent on substrate, specifically bedrock outcrops.

Pool Quality: Winter/Spring grazing will protect riparian vegetation and bank stability and will not affect pool quality.

Off-Channel Habitat: Winter/Spring grazing will protect riparian vegetation and bank stability and will not affect off channel habitat.

Refugia: Winter/Spring grazing will protect riparian vegetation and bank stability and will not affect refugia.

Width/Depth Ratio: Winter/Spring grazing will protect riparian vegetation and bank stability and will not affect width to depth ratios.

Streambank Condition: Winter/Spring grazing will protect riparian vegetation and bank stability and will not affect streambank condition.

Floodplain Connectivity: Winter/Spring grazing will protect riparian vegetation and bank stability and will not affect floodplain connectivity.

Changes in Peak/Base Flows: Winter/Spring grazing will protect riparian vegetation and bank stability and will not affect flow regime. Flows in these streams is dependent on annual rainfall and storm events.

Increases in Drainage Network: Grazing management will not affect drainage network.

Road Density and Location: Grazing management will not affect road density and location.

Disturbance History: Grazing management will not affect disturbance history.

Riparian Reserves: Grazing management will not affect riparian reserve system.

Table 13. Checklist for documenting environmental baseline conditions and effects of **range allotments on intermittent streams in the Lower John Day River Subbasin** on relevant indicators.

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature			**X**	**X**		
Sediment	**X**				**X**	
Chem. Contam./Nut.	**X**				**X**	
Habitat Access: Physical Barriers		**X**			**X**	
Habitat Elements: Substrate	**X**				**X**	
Large Woody Debris	**N/A**				**X**	
Pool Frequency			**X**		**X**	
Pool Quality	**X**				**X**	
Off-Channel Habitat	**N/A**				**X**	
Refugia			**X**		**X**	
Channel Cond. & Dyn: Width/Depth Ratio	**N/A**				**X**	
Streambank Cond.	**X**			**X**		
Floodplain Connectivity		**X**			**X**	
Flow/Hydrology: Peak/Base Flows		**X**			**X**	
Drainage Network Increase	**X**				**X**	
Watershed Conditions: Road Dens. & Loc.		**X**			**X**	
Disturbance History	**X**				**X**	
Riparian Reserves	**N/A**				**X**	

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments with perennial streams in the Lower John Day River subbasin; 2581 Elsie Martin and 2607 Pryor Farms.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

Yes, hot season grazing has the potential to hinder attainment of key habitat parameters, most notably streambank stability, water temperature, and large wood.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is more than a negligible probability of take of proposed/listed anadromous salmonids. This is because grazing management is occurring during spawning and rearing of summer steelhead. Although it is a low probability there is potential interactions between spawning and rearing fish, and cattle, when cattle are watering. This has the potential of harassing steelhead that are trying to spawn, trampling of redds, and the displacement of fry into a more hostile environment. **Likely to Adversely Affect**

Answers to the Dichotomous Key For Making ESA Determination of Effects for the following Range Allotments with intermittent streams in the Lower John Day River subbasin; 2509 Belshe, 2514 Black Rock Association, 2541 Eakin, 2547 Sixmile, 2561 Girds Creek, 2565 Leroy Britt, 2578 Logan, 2593 Verne A. Mobley, 2601 Nash, 2629 Tatum, and 2631 Dipping Vat.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, the current grazing management strategies were designed to attain or protect the relevant properly functioning indicators.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is less than a negligible probability of take of proposed/listed anadromous salmonids. These grazing strategies were designed to improve riparian habitat and minimize livestock use along fish bearing streams. Grazing management activities in 1999 will be completed or nearing completion on these allotments before the effective listing date of steelhead (5/24/99). Potential interactions between spawning and rearing fish, and livestock, when cattle are watering is less than negligible. **Not Likely to Adversely Affect**

Irrigation withdrawal for Agricultural Fields

This program conducts farming and irrigation through agriculture lease or wildlife restoration and enhancement projects on approximately 137.5 acres along Bridge Creek from RM 1 to RM 10. Water to irrigate these fields is taken from the mainstem John Day River and Bridge Creek, consumptive use of irrigation is regulated under Oregon Water Law and restricts season of use, rate (cfs), and duty (acre-feet)(Oregon Water Resources Department, 1986, John Day River Basin Report). The BLM imposed additional mitigation measures to further reduce potential effects on rearing summer steelhead in Bridge Creek: (1) termination of irrigation if and when Bridge Creek discharge reaches 10 cfs, and (2) 14 feet minimum buffer/filter strip between field and floodplain (USDA-BLM, 1996, Decision Record - Sutton Mountain Coordinated Resource Management Plan).

Water use for public land irrigation and subsequent reduction of stream discharge varies within the legal allocation identified in the water right, with a theoretical maximum use in Bridge Creek of 3.4 cfs (before June 15) and 1.7 cfs (after June 15) over approximately 10 miles of stream. The approximate 137.5 acres of land and water along Bridge Creek are used for cultivating annual seed/grain crops which typically requires only about 30% of the total duty allocation and, therefore actual use is not constant. Irrigation is usually completed around the end of July, when stream flows approach the low flow period. In fact, 90 percent of the lands along Bridge Creek scheduled for irrigation in 1998 did not use Bridge Creek water at all due to precipitation satisfying the water requirements of the crop. Further, irrigation flow stipulations prescribed for public agricultural lands along Bridge Creek terminate use when discharge reaches 10 cfs to protect rearing summer steelhead and resident trout.

Sediment, nutrient, and chemical input from surface runoff is expected to be minimal to nonexistent due to field slope (0-2.5%), and the existence of riparian and/or upland vegetation between field and river along the major sites. Infiltration and subsurface contribution of nutrients and chemicals to the river is also expected to be minimal and non-observable as a result of field elevation relative to stream surface, and that the majority of water and nutrients applied would be consumed by the crop and surrounding vegetation. Agricultural fields are approximately 8 vertical feet above the stream surface.

Rational for Checklist Ratings of Effects for Population and Environmental Indicators for <u>Irrigation withdrawal for Agricultural Fields on Bridge Creek.</u>

Water Temperature: Irrigation removal of water from the stream during spring and summer may reduce thermal buffer due to reduced discharge. However, no measurable effect is anticipated.

Sediment/Turbidity: Bridge Creek is a high sediment system, irrigation withdrawal would not affect this parameter.

Chemical Contamination/Nutrients: Overland buffers and groundwater flow should filter irrigation return flow and not introduce chemicals or nutrients into the stream. Bridge Creek is currently Properly functioning in this element, irrigation withdrawal should not affect this rating.

Physical Barriers: Irrigation withdrawal will not block fish passage within the stream or add any other physical barriers.

Substrate: Irrigation withdrawal will not effect substrate composition.

Large Wood: Irrigation withdrawal will not affect large wood recruitment or establishment within this stream.

Pool Frequency/Pool Quality/Off-Channel Habitat: Irrigation withdrawal will not affect these habitat parameters.

Refugia: Irrigation will not affect refugia within this stream.

Width/Depth Ratio: Irrigation withdrawal will not affect width to depth ratios.

Streambank Condition: Irrigation withdrawal will not affect streambank condition.

Floodplain Connectivity: Irrigation withdrawals will not affect floodplain connectivity.

Changes in Peak/Base Flows: Irrigation withdrawals in the summer may affect mid range flows; however, when base flow drops to 10 cfs, irrigation use will be suspended, therefore irrigation use will not affect base flows.

Increases in Drainage Network: Irrigation withdrawal will not affect drainage network.

Road Density and Location: Irrigation withdrawal has no affect on road density or location.

Disturbance History: Irrigation withdrawal will not affect disturbance history.

Riparian Reserves: Irrigation withdrawal will not affect riparian reserves.

Table 14. Checklist for documenting environmental baseline conditions and effects of **irrigation withdrawal from Bridge Creek for agricultural fields** on relevant indicators.

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature			**X**		**X**	
Sediment			**X**		**X**	
Chem. Contam./Nut.	**X**				**X**	
Habitat Access: Physical Barriers		**X**			**X**	
Habitat Elements: Substrate		**X**			**X**	
Large Woody Debris			**X**		**X**	
Pool Frequency			**X**		**X**	
Pool Quality		**X**			**X**	
Off-Channel Habitat		**X**			**X**	
Refugia		**X**			**X**	
Channel Cond. & Dyn: Width/Depth Ratio		**X**			**X**	
Streambank Cond.			**X**		**X**	
Floodplain Connectivity		**X**			**X**	
Flow/Hydrology: Peak/Base Flows		**X**			**X**	
Drainage Network Increase	**X**				**X**	
Watershed Conditions: Road Dens. & Loc.		**X**			**X**	
Disturbance History	**X**				**X**	
Riparian Reserves	**N/A**				**N/A**	

Answers to the Dichotomous Key for Making ESA Determination of Effects for Irrigation withdrawal from Bridge Creek for agricultural fields.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Steelhead trout.

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

Yes, potentially water temperature.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is a negligible (extremely low) probability of take of proposed/listed anadromous salmonids or destruction/adverse modification of habitat.

Determination: **Likely to Adversely Affect**

Natural Gas Pipeline Right-of-Way

There is located across the district in the Lower John Day Area two right-of-ways for natural gas pipelines. These right-of-ways are currently leased with a renewal date of 2015. The area of concern with regard to steelhead is a six mile section of pipe buried beneath Pine Hollow, an intermittent stream in the lower basin, this particular section is a migratory corridor for steelhead and flows only for a short period in the late winter/early spring. Periodic maintenance of this pipeline is conducted in the summer months. This lower section of Pine Hollow is a broad cobble/large gravel field characterized by a lack of vegetation. Maintenance activities disturb the stream bed; however, these activities are not deemed to be prohibiting stream recovery.

The key activity with regard to the pipeline and steelhead trout implications is the maintenance of the pipeline. This maintenance is done on an as needed basis. This consists of digging up the pipeline, repairing the problems and re-burying it under the stream channel/corridor. The section of stream which flows over this portion of pipeline as a very broad channel. Water typically only flows in this area for a short time in the late winter/spring. Maintenance generally occurs when this section of stream is dry.

Rational for Checklist Ratings of Effects for Population and Environmental Indicators for <u>Natural Gas Pipeline Right-of-Way on the Lower John Day River.</u>

Water Temperature: Maintenance of the pipeline will not affect water temperature.

Sediment/Turbidity: Maintenance of the pipeline will not affect sediment or turbidity.

Chemical Contamination/Nutrients: Maintenance of the pipeline will not affect chemical or nutrient introductions.

Physical Barriers: Maintenance of the pipeline will not introduce any physical barriers,

Substrate: Maintenance of the pipeline will disturb the substrate. Past disturbances have revealed a very homogeneous substrate of cobble and large gravel, very little in the way of fine sediments have been unearthed during maintenance activities.

Large Wood: Maintenance of the pipeline will not affect large wood.

Pool Frequency: Pools and especially residual pools are rare within this reach of stream. Maintenance will not affect frequency.

Pool Quality: Maintenance of the pipeline will not affect pool quality.

Off-Channel Habitat: Maintenance of the pipeline will not affect off-channel habitat.

Refugia: Maintenance of the pipeline will not affect refugia.

Width/Depth Ratio: Maintenance of the pipeline will not affect width to depth ratios.

Streambank Condition: Maintenance of the pipeline does disrupt the channel substrate and associated streambanks. Very little riparian vegetation exists within this stream reach. Disruption of the banks could be a factor in poor recovery status of this lower section; however, historical data shows this section of stream to be very similar in condition to what it has been historically.

Floodplain Connectivity: Maintenance of the pipeline will not affect floodplain connectivity.

Changes in Peak/Base Flows: Maintenance of the pipeline will not affect base flows or peak flows.

Increases in Drainage Network: Maintenance of the pipeline will not affect the drainage network.

Road Density and Location: Maintenance of the pipeline will not affect road density or location.

Disturbance History: Maintenance of the pipeline will not affect disturbance history.

Riparian Reserves: Maintenance of the pipeline will not affect riparian reserves.

Table 15. Checklist for documenting environmental baseline conditions and effects of **natural gas pipeline right-of-way maintenance** on relevant indicators for Pine Hollow, an intermittent tributary of the Lower John Day River.

PATHWAYS: **INDICATORS**	**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)**		
	Properly Functioning	**At Risk**	**Not Properly Functioning**	**Restore**	**Maintain**	**Degrade**
Water Quality: Temperature			**X**		**X**	
Sediment	**X**				**X**	
Chem. Contam./Nut.	**X**				**X**	
Habitat Access: Physical Barriers	**X**				**X**	
Habitat Elements: Substrate	**X**				**X**	
Large Woody Debris	**N/A**				**X**	
Pool Frequency			**X**		**X**	
Pool Quality	**X**				**X**	
Off-Channel Habitat	**N/A**				**X**	
Refugia			**X**		**X**	
Channel Cond. & Dyn: Width/Depth Ratio	**N/A**				**X**	
Streambank Cond.	**X**				**X**	
Floodplain Connectivity		**X**			**X**	
Flow/Hydrology: Peak/Base Flows		**X**			**X**	
Drainage Network Increase		**X**			**X**	
Watershed Conditions: Road Dens. & Loc.		**X**			**X**	
Disturbance History	**N/A**				**X**	
Riparian Reserves	**N\A**				**X**	

Answers to the Dichotomous Key for Making ESA Determination of Effects for Natural Gas Pipeline Right-of-Way maintenance on the Lower John Day River.

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Steelhead trout.

2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

Yes, particularly streambank condition. However, this appears to be more a function of existing channel condition and potential recovery rate.

3. Does the proposed action(s) have the potential to result in "take" of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

There is a negligible (extremely low) probability of take of proposed/listed anadromous salmonids or destruction/adverse modification of habitat.

Determination: **Likely to Adversely Affect**

E. Combined Effects

Combined Effects of Prineville District BLM actions for population and Environmental Indicators for the Upper Main, North Fork, Middle Fork, and Lower John Day River Subbasins (See Table 1).

Water Temperature: Removal of riparian vegetation due to road maintenance is reducing a small amount of shade, or potentially preventing small amounts of vegetation to establish and mature within the riparian zone. Removal of riparian vegetation by livestock grazing with spring or short season treatments is temporary, until regrowth occurs, and effects mainly grasses and forbs. These actions are not expected to produce a negative effect on water temperatures for steelhead. Overall guidelines in place are designed to protect riparian vegetation which will maintain or improve water temperatures.

Sediment/Turbidity: Potentially a small amount of sediment could enter spawning/rearing stream reaches due to road maintenance and grazing. Due to guidelines in place to protect vegetation, this amount of sediment should be insignificant and not degrade steelhead habitat. Grazing systems are designed to leave residual ground cover that will minimize the amount of sediment entering the system.

Chemical Contamination/Turbidity: Water chemistry should not be impacted by federal actions due to the fact that grazing systems are designed to protect and allow the recovery of water quality.

Physical Barriers: No BLM actions should be causing migration barriers for steelhead.

Substrate Embeddedness: Potentially a small amount of fine sediment could enter the system due to road maintenance, and grazing management. These programs are designed to minimize/prevent fine sediment from entering streams.

Large Wood: Grazing systems are designed to minimize utilization on developing trees and shrubs by using riparian pastures during seasons when upland and floodplain grasses are more palatable than woody vegetation.

Pool Frequency: Grazing systems are designed to protect and improve streambank stability and riparian vegetation. Stable, vegetated streambanks and instream large wood are important factors in the development and maintenance of high quality pool habitats. Riparian vegetation is prevented from establishing in isolated areas due to road maintenance. These areas are scattered and minor and not expected to adversely affect the frequency of deep pools.

Pool Quality: Grazing systems are designed to protect and improve streambank stability and riparian vegetation. Stable, vegetated streambanks and instream large wood are important factors in the development and maintenance of high quality pool habitats. Riparian vegetation is prevented from establishing in isolated areas due to road maintenance. These areas are scattered and minor and not expected to adversely affect the frequency of deep pools.

Off-Channel Habitat: Grazing systems are designed to protect and improve streambank stability and riparian vegetation. Stable, vegetated streambanks and instream large wood are important factors in the development and maintenance of off-channel habitats. Riparian vegetation is prevented from establishing in isolated areas due to road maintenance. These areas are scattered and minor and not expected to adversely affect the formation and maintenance of off-channel habitats..

Refugia: Ongoing actions are designed to protect fisheries habitat and limit the disturbance to the population.

Wetted Width/Max Depth Ratio: Grazing systems are designed to protect and improve streambank stability and riparian vegetation. Stable, vegetated streambanks and instream large wood are important factors in maintaining appropriate channel widths for each respective stream channel type. Riparian vegetation is prevented from establishing in isolated areas due to road maintenance. These areas are scattered and minor and not expected to adversely affect this indicator.

Streambank Condition: Grazing systems are designed to protect and improve streambank stability and riparian vegetation. Well vegetated streambanks and instream large wood are important factors in maintaining good streambank conditions. Temporary minor bank damage does occur from grazing, but regrowth of vegetation protects against erosion during high flow events. Cumulatively this should not have a significant affect to steelhead habitat.

Floodplain Connectivity: All actions are designed to protect/enhance floodplain connectivity. No detrimental effects to steelhead habitat are expected.

Changes in Peak/Base Flow: Actions are designed to recover these systems to their historic flow regimes or maintain current conditions.

Drainage Network Increase: The cumulative affects on the actions should not significantly change the drainage network..

Road Density and Location: Road densities will increase very slightly in the basin, but only on a temporary basis.

Disturbance History: Disturbance history will not be adversely affected by any of the actions.

Riparian Reserves: As described in the environmental baseline section, no assessment of riparian potential has occurred. However, all actions are design to minimize affects to the riparian areas.

Table 1. Showing the checklist for documenting **combined effects for BLM actions** on relevant indicators for the **Upper Main, North Fork, Middle Fork, and Lower John Day River Subbasins**

PATHWAYS: **INDICATORS**	**COMBINED EFFECTS OF THE ACTIONS**

	Restore	Maintain	Degrade
Water Quality: Temperature		X	
Sediment		X	
Chem. Contam./Nut.		X	
Habitat Access: Physical Barriers		X	
Habitat Elements: Substrate		X	
Large Woody Debris		X	
Pool Frequency		X	
Pool Quality		X	
Off-Channel Habitat		X	
Refugia		X	
Channel Cond. & Dyn: Width/Depth Ratio		X	
Streambank Cond.		X	
Floodplain Connectivity		X	
Flow/Hydrology: Peak/Base Flows		X	
Drainage Network Increase		X	
Watershed Conditions: Road Dens. & Loc.		X	
Disturbance History		X	
Riparian Reserves	N/A		

Determinations of effects for the Cumulative Effects of BLM actions on the Upper Main, North Fork, Middle Fork, and Lower John Day River Subbasins

BLM actions in these subbasins of the John Day River are comprised of four that were rated as Likely to Adversely Affect, and four that were rated as Not Likely to Adversely Affect. Reasons for the LAA ratings were due to the possible disturbance of spawning fish and possible disturbance of rearing fish from grazing activities and spawning bed surveys. These activities could potentially disrupt spawning fish activities or cause juvenile rearing fish to move temporarily into a more hostile environment. Also, gas pipeline maintenance and road maintenance activities could hinder the attainment of key habitat indicators by preventing the re-establishment or streambank/riparian vegetation in various locations. Cumulatively these disturbances are minor, and should not impact steelhead trout populations to a magnitude that the continued existence of the species is jeopardized.

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